

# Checklist of the Mammals of Panama

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Since Goldman (1920) published his *Mammals of Panama*, and particularly in recent years, much additional information has been gathered on the mammals of the Republic. Now there is need for an up-to-date checklist to supplement the still basic Goldman volume.

Chief among recent contributors to the knowledge of Panamanian mammals have been Robert K. Enders and Oliver P. Pearson of Swarthmore College; Carl M. Johnson, Pedro Galindo, and Eustorgio Méndez of the Gorgas Memorial Laboratory, Panamá; several officers of the United States Army Preventive Medicine Survey Detachment in the Canal Zone: Colonel Franklin S. Blanton, Major Gordon Field, Major Robert Altman, Major Vernon J. Tipton, and Charles M. Keenan; Conrad E. Yunker, Middle America Research Unit; Nathan Gale, Canal Zone Veterinary Office; E. L. Tyson, Florida State University; the former resident naturalist of the Canal Zone Biological Area, Carl B. Koford; and Alexander Wetmore, former Secretary of the Smithsonian Institution.

Since 1952, seven field parties of the Smithsonian Institution have visited Panama to study mammals. These parties have enjoyed the support and cooperation of the Gorgas Memorial Laboratory, the United States Army, the Canal Zone Biological Area, the Middle America Research Unit, and the Chiriqui Land Company (through the Director of its Almirante Hospital, Dr. Gustav Engler). Part of the funds for field work and the preparation of this manuscript have been supplied by the National Science Foundation (grant no. G19415).

The checklist follows the order of Simpson's classification of mammals (Simpson, 1945). As far as possible, the nomenclature adopted in the checklist reflects my study of specimens. Where subspecies are not mentioned in a species account, it may be presumed that the species is thought to be monotypic. Since Goldman (1920) and Hall and Kelson (1959) are

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the references most likely to be available to persons using this checklist, departures from the nomenclature of these authors are indicated in synonymies. Other synonyms have not been mentioned, except in a few instances in the text. Full synonymies are readily accessible in Miller and Kellogg (1955), Hall and Kelson (1959), and Cabrera (1958 and 1961).

Species that were not known to Goldman (1920) as part of the fauna of Panama are marked with an asterisk (\*). Those that were not known within the area covered by North American lists or had not been described when the most recent lists were prepared (Miller and Kellogg, 1955, and Hall and Kelson, 1959) are marked with a dagger (†). In instances where I was not the initial collector of a species here reported in Panama for the first time, I have noted this fact in the account of the species.

Geographic distribution has been determined from specimens and from literature (citations omitted for brevity). Most of the specimens of Panamanian mammals are in the Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, the British Museum (Natural History), the Museum of Comparative Zoology (Harvard University), and the United States National Museum, or in collections in Panama. The brief notes on habits and habitat are based entirely on Panamanian observations.

## Order MARSUPIALIA

### Family Didelphidae

#### **Caluromys derbianus** Waterhouse

= *Philander laniger* Goldman

Common at lower elevations (sea level up to at least 3200 feet), probably throughout Panama. Evergreen and deciduous forest; arboreal. Several Panamanian subspecies: (1) *C. d. derbianus* Waterhouse. Darién west to Canal Zone and La Chorrera (Panamá); similar specimens from Guánico (Los Santos), Santiago (Veraguas), and Boquerón and Isla Parida (Chiriquí). (2) *C. d. fervidus* Thomas (= *C. d. centralis* Hollister). Caribbean coast of western Panama (mainland, Isla Bastimentos, and Cayo Agua, Bocas del Toro) and Santa Fé (Veraguas). (3) *C. d. nauticus* Thomas. Islands off the Pacific coast of western Panama (Isla Brava, Chiriquí; Isla Gobernadora and Isla Cébacó, Veraguas); similar specimens from Parita (Herrera), and Panamá Viejo (Panamá). (4) *C. d. pallidus* Thomas. Pacific coast of extreme western Panama (Divalá and Bugaba, Chiriquí).

#### **Monodelphis adusta** Thomas

= *Peramys melanops* Goldman

= *Monodelphis melanops* Hall and Kelson

Rare at medium elevations in extreme eastern Panama. Specimens from Cana, 2000 feet, Guayabo, and Tacarcuna Village, 1950 feet (Darién). Trapped among boulders on a dry, partially open gravel bar (Tacarcuna Village) and among rocks on a riverbank in heavy forest (Cana). *Monodelphis adusta* occurs from eastern Panama through Colombia and Ecuador

to central Peru without exhibiting geographic variation. *Peramys melanops* Goldman and *Peramys peruvianus* Osgood are synonyms of *adusta*. Their supposed distinctive characteristics are merely individual variations. On the other hand, *Monodelphis osgoodi* Doult of western Bolivia and southern Peru is probably a distinct species. It has been regarded as a subspecies of *M. adusta*.

\* † **Marmosa impavida** Tschudi

Rare. At high elevations in extreme eastern Panama. O. P. Pearson collected specimens on Loma Cana, 4900 feet, and Cerro Pirre, 5300 feet (Darién). The Panamanian subspecies is *M. i. caucae* Thomas.

**Marmosa invicta** Goldman

Rare. At medium elevations (1500–4000 feet), possibly throughout Panama, in suitable habitats. It has been trapped on the ground, and on or under logs in moist fog forest. Specimens from Cana, Tacarcuna Casita, and Tacarcuna Laguna (Darién); Cerro Azul (Panamá); and Cylindro (Bocas del Toro).

**Marmosa mexicana** Merriam

= *Marmosa mexicana* Goldman (part.)

Uncommon. In the lowland savannas of western Panama. The subspecies in Panama is *M. m. savannarum* Goldman. The relationship of *M. mexicana* to *M. robinsoni* is not clear.

\* † **Marmosa** species

A species resembling *Marmosa phaea* Thomas has been taken at Tacarcuna Casita, 1500 feet (Darién); Armila (San Blas); Salamanca Hydrographic Station (Canal Zone); and Almirante (Bocas del Toro). Evergreen forest; arboreal.

**Marmosa robinsoni** Bangs

= *Marmosa fulviventer* Goldman

= *Marmosa mexicana* Goldman (part.)

= *Marmosa mitis* Hall and Kelson

Abundant throughout a large part of Panama from sea level to elevations of 4000–6000 feet. Semi-arboreal, but often trapped on the ground. Two subspecies have been reported in Panama: (1) *M. r. fulviventer* Bangs, Isla Saboga and Isla del Rey; (2) *M. r. isthmica* Goldman, mainland. Practically ubiquitous. For use of the name *Marmosa robinsoni* Bangs in place of *M. mitis* Bangs, see Cabrera (1958, p. 24).

**Philander opossum** Linnaeus

= *Metachirus opossum* Goldman

Locally abundant at lower elevations (up to 2000 feet), possibly throughout Panama. Mostly terrestrial, but also climbs. Evergreen and deciduous forest. The subspecies in Panama is *P. o. fuscogriseus* J. A. Allen.

**Metachirus nudicaudatus** E. Geoffroy St.-Hilaire

Locally common at lower elevations (up to 2000 feet), possibly throughout Panama. Terrestrial. Evergreen and deciduous forest. The subspecies in Panama is *M. n. dentaneus* Goldman. Where *Metachirus nudicaudatus* and *Philander opossum* occur together one is usually much more abundant than the other.

**Didelphis marsupialis** Linnaeus

Abundant throughout Panama from sea level up to 5000 feet. Ubiquitous. Terrestrial, but also climbs. Three subspecies are thought to occur in Panama: (1) *D. m. battyi* Thomas, Isla Coiba; (2) *D. m. cauae* J. A. Allen (= *D. m. etensis* J. A. Allen), mainland; (3) *D. m. particeps* Goldman, Isla del Rey.

**Chironectes minimus** Zimmermann

= *Chironectes panamensis* Goldman

= *Chironectes panamensis* Hall and Kelson

Locally common to abundant throughout, from sea level to 4000 feet, in suitable streams. Aquatic, possibly restricted to streams with large populations of shrimp. Specimens from Boca de Río Paya, Cana, 2000 feet, Guayabo, Río Jaqué, and Tacarcuna Village, 1950 feet (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000 feet (Panamá); Fort Sherman, New San Juan, and Pedro Miguel (Canal Zone); Cerro Hoya, 1450 feet and Guánico (Los Santos); Río Bubí and Río Viejo, near Soná (Veraguas); Río Colorado, 4000 feet (Chiriquí); and 7 km. SSW. of Changuinola and Sibube (Bocas del Toro). Study of specimens from Brazil, British Guiana, Venezuela, and Central America shows that only one species can be distinguished. Variations in coloration and perhaps in cranial characters as well suggest that the species is polytypic. The Panamanian subspecies is *C. m. panamensis* Goldman.

## Order INSECTIVORA

## Family Soricidae

\* **Cryptotis andersi** Setzer

Rare. Known by one specimen from Cylindro (Bocas del Toro). Fog forest. Terrestrial.

**Cryptotis nigrescens** J. A. Allen

= *Cryptotis merus* Goldman

= *Cryptotis mera* Hall and Kelson

= *Cryptotis tersus* Hall and Kelson

= *Cryptotis zeteki* Hall and Kelson

Rare. At high elevations in evergreen forest. Terrestrial. Subspecies in Panama: (1) *C. n. mera* Goldman, Cerro Pirre, 4500 feet (Darién); (2) *C. n. zeteki* Setzer (= *C. tersus* Goodwin), Cerro Punta, 6500 feet, and Santa Clara, 4200 feet (Chiriquí). These subspecies are poorly differentiated from typical *C. nigrescens* of Costa Rica.



## Order CHIROPTERA

## Family Emballonuridae

**Rhynchonycteris naso** Wied-Neuwied

= *Rhynchiscus naso* Goldman

Abundant near sea level, probably throughout Panama. Flies over or near forest-bordered streams or lakes; roosts on rocks, logs, or trunks of trees over water. Specimens from Boca de Río Paya, Paya Village, and Río Jesucito (Darién); Armila and Mandinga (San Blas); Barro Colorado Island, Corozal, Fort Gulick, Gamboa, Lagartera, 2 mi. NW. of Pedro Miguel, Río Mandinga, and Summit (Canal Zone); Almirante, 7 km. SSW. of Changuinola, and Sibube (Bocas del Toro); and San Félix (Chiriquí). For use of the generic name *Rhynchonycteris* Peters in place of *Rhynchiscus* Miller, see Husson (1962, p. 35).

**Saccopteryx bilineata** Temminck

Abundant near sea level, probably throughout Panama; occasionally found to 2000 feet. Flies over or near forest-bordered streams, lakes, or beaches; roosts on trunks of trees, on logs and rocks, and in caves and houses. Specimens from Cituro, Cana, and Cerro Sapo (Darién); Armila (San Blas); Alhajuela, Ancón, Balboa, Barro Colorado Island, Culebra, Fort Kobbe, Fort San Lorenzo, Fort Sherman, 3 mi. SE. of Gamboa, Gatún, Las Cascadas, Madden Dam, Orchid Island, Río Puente, Summit, Tabernilla, Venado Beach (Canal Zone); Cerro Azul, Chilibre, Chilibrillo Caves, Isla Chaperera, Isla San José, La Chorrera, Panamá Viejo, and Isla Taboga (Panamá); Guánico (Los Santos); and Almirante (Bocas del Toro).

**Saccopteryx leptura** Schreber

Uncommon. Near sea level in the Canal Zone and eastern Panama. Flies over or near forest-bordered streams and lakes. Specimens from Boca de Río Paya and Paya Village (Darién); Pacora (Panamá); and Alhajuela, Barro Colorado Island, Fort Randolph, and Gamboa (Canal Zone).

**\*Cormura brevirostris** Wagner

Uncommon. Lowlands of eastern Panama and on the Caribbean coast of western Panama. Evergreen forest. Roosts under logs and rocks. Specimens from Capetí (Darién); Armila (San Blas); and Almirante (Bocas del Toro).

**\*Peropteryx kappleri** Peters

Rare. Lowlands of eastern Panama and on the Caribbean coast of western Panama. Roosting in a cave at Río Puente and netted over a stream flowing through a pasture at Almirante. Specimens from Yavisa (Darién); Río Puente (Panamá); and Almirante (Bocas del Toro). The Panamanian subspecies is *P. k. kappleri* Peters.

**Peropteryx macrotis** Wagner

= *Peropteryx canina* Goldman

Uncommon. Possibly widespread in the lowlands, but presently recorded only in and near the Canal Zone. Roosts in caves and rock crevices near water. Specimens from Buena Vista (Colón); Balboa, Gatún, and Santa Rosa (Canal Zone); and Río Puente (Panamá). The Panamanian subspecies is *P. m. macrotis* Wagner.

**Centronycteris maximiliani** Fischer

= *Centronycteris centralis* Goldman

Rare. Lowlands of the Canal Zone and the Pacific coast of western Panama. Specimens from Cerro Malí (Darién), Barro Colorado Island and Fort Clayton (Canal Zone), and Bugaba (Chiriquí). The Canal Zone specimens were taken in clearings. The Panamanian subspecies is *C. m. centralis* Thomas.

**Diclidurus virgo** Thomas

Rare. Canal Zone and Pacific coast of western Panama at low and medium elevations. Specimens from Albrook Field, Fort Gulick, and Gamboa (Canal Zone), and Boquete and Pueblo Nuevo (Chiriquí).

**Family Noctilionidae****Noctilio labialis** Kerr

= *Dirias albiventer* Goldman

Common at lower elevations, probably throughout Panama. Flies over streams and lakes; roosts in hollow trees and houses. Specimens from Boca de Río Paya (Darién); Armila (San Blas); Pacora (Panamá); Nuevo Limón (Colón); Barro Colorado Island, Empire, Fort Gulick, Galeta Island, Gamboa, Juan Mina, and Puma Island (Canal Zone); Guánico (Los Santos); and Almirante, 7 km. SSW. of Changuinola, and Sibube (Bocas del Toro). The Panamanian subspecies is *N. l. labialis* Kerr (= *Noctilio minor* Osgood. See Cabrera, 1958, p. 55).

**\* Noctilio leporinus** Linnaeus

Common at lower elevations, probably throughout Panama. Flies over streams, lakes, and sea. Roosts in hollow trees. Specimens from Boca de Río Paya (Darién); Armila (San Blas); Fort Sherman, Río Chagres, and Río Mandinga (Canal Zone); and Almirante and 7 km. SSW. of Changuinola (Bocas del Toro). The Panamanian subspecies is *N. l. mexicanus* Goldman.

**Family Phyllostomidae****Pteronotus parnellii** Gray

= *Chilonycteris rubiginosa* Goldman

= *Chilonycteris parnellii* Hall and Kelson

Abundant throughout the lowlands of Panama and locally up to 4800

feet. Evergreen and deciduous forests and fruit groves. Roosts in caves, tunnels, and probably in hollow trees. Specimens from Río Chucunaque (Darién); Armila (San Blas); Cerro Azul, 2000 feet, and Chilibrillo Caves (Panamá); Buena Vista (Colón); Bas Obispo, Galeta Island, Paraíso, 2 mi. N. of Summit and Vijía (Canal Zone); Cerro Hoya, 1500–2900 feet, and Guánico (Los Santos); Penonomé (Coclé); and Almirante, 7 km. SSW. of Changuinola, head of Río Changena, 4800 feet, and Sibube (Bocas del Toro). I am in full agreement with Burt and Stirton (1961, p. 24) on the synonymy of the generic names *Pteronotus* Gray and *Chilonycteris* Gray. At the species level, my own study of the problem shows that Koopman (1955, p. 111) was right in his contention that *P. parnellii* Gray and *P. rubiginosus* Wagner are conspecific. According to the 1961 International Code of Zoological Nomenclature (Art. 21bii, p. 19) *P. parnellii* must be considered to be the prior name. The Panamanian subspecies is *P. p. fuscus* J. A. Allen.

\* ***Pteronotus psilotis* Dobson**

= *Chilonycteris psilotis* Hall and Kelson

In Panama, known only from the caves at Penonomé (Coclé), where it is numerous, and at Armila (San Blas), where a few have been caught in mist nets set over forest streams. This species occurs without significant variation from Mexico to Trinidad. It may be conspecific with *Chilonycteris personata* Wagner, but specimens that have been positively identified as the latter species have not been available for comparison. The description and measurements of a specimen of *C. personata* from Mato Grosso (Burmeister, 1854, p. 76, and Wagner, 1855, p. 680) agree with those of specimens of *C. psilotis* from Central America and northern South America.

\* ***Pteronotus suapurensis* J. A. Allen**

Locally abundant in lowlands and up to 5300 feet, probably throughout Panama. Roosts in caves. Specimens from Tacarcuna Village, 1950 feet (Darién); Armila (San Blas); Chilibrillo Caves (Panamá); Madden Dam (Canal Zone); Penonomé (Coclé); and Cerro Punta, 5300 feet (Chiriquí).

\* ***Micronycteris brachyotis* Dobson**

= *Micronycteris platyceps* Hall and Kelson

Rare. Evergreen and deciduous forest. Roosts in caves and hollow trees. Specimens from Cerro Azul, 2000 feet (Panamá); Fort San Lorenzo (Canal Zone); and Guánico (Los Santos). For the use of *M. brachyotis* in place of *M. platyceps*, see Goodwin and Greenhall (1961, p. 231).

\* ***Micronycteris hirsuta* Peters**

Rare. Possibly throughout the lowlands of Panama and locally up to 4800 feet elevation. Evergreen and deciduous forests. Roosts in tree holes and buildings. Specimens from Cerro Azul, 2000 feet (Panamá); Orchid Island (Canal Zone); Guánico (Los Santos); and upper Río Changena, 4800 feet (Bocas del Toro).

**Micronycteris megalotis** Gray

= *Micronycteris microtis* Goldman

Locally common. Probably throughout the lowlands of Panama and up to 5300 feet elevation. Evergreen and deciduous forest. Roosts in houses and culverts and in hollow trees, logs, and stumps. Specimens from Pinogana and Río Jesucito (Darién); Cerro Azul, 2000 feet, Isla San José, Pacora, Isla Taboga, and Isla Taboguilla (Panamá); Barro Colorado Island, Cocoli, Fort Clayton, Fort Kobbe, Fort Randolph, and Orchid Island (Canal Zone); Guánico (Los Santos); Boquete and Cerro Punta, 5300 feet (Chiriquí); and Almirante and Punta de Peña (Bocas del Toro). The Panamanian subspecies is *M. m. microtis* Miller.

\*† **Micronycteris minuta** Gervais

Rare. Taken in mist nets over streams in evergreen forest. Specimens from Boca de Río Paya (Darién) and Cerro Hoya, 1800 feet (Los Santos). First taken in Panama by Rudolpho Hinds.

\*† **Micronycteris nicefori** Sanborn

Rare. Caribbean coast of eastern Panama. Taken in mist nets over stream in evergreen forest and from roost in concrete building. Specimens from Armila (San Blas) and Fort Gulick (Canal Zone). First taken in Panama by C. M. Keenan.

\* **Micronycteris schmidtorum** Sanborn

Rare. Deciduous forest. Known in Panama only by specimens taken by F. M. Greenwell at Guánico (Los Santos).

\* **Micronycteris sylvestris** Thomas

Rare. Taken in mist net over stream in evergreen forest at Armila (San Blas).

**Lonchorhina aurita** Tomes

= *Lonchorina aurita* Goldman

Uncommon, but fairly widespread in Panama. Evergreen and deciduous forest. Roosts in caves and mine tunnels. Specimens from Chilibrillo Caves (Panamá); 2 mi. N. of Summit and Vijía (Canal Zone); and 14 km. SSW. of Changuinola and upper Río Changena, 4800 feet (Bocas del Toro). The Panamanian subspecies is *L. a. aurita* Tomes.

**Macrophyllum macrophyllum** Schinz

Uncommon, but probably occurs throughout the lowlands of Panama. Flies over forest-bordered streams. Roosts in caves and masonry ruins (Panamá Viejo). Specimens from Jaqué and Boca de Río Paya (Darién); Armila and Puerto Obaldía (San Blas); Chepo, Pacora, Cerro Azul, 1200 feet, and Panamá Viejo (Panamá); Madden Dam, Fort Gulick, Fort Davis, and Salamanca Hydrographic Station (Canal Zone); Cerro Hoya, 1800 feet



(Los Santos) ; and Almirante and 12 km. SSW. of Changuinola (Bocas del Toro).

\* ***Tonatia bidens* Spix**

Rare. Evergreen forest. Specimens from Cerro Azul, 2000 feet (Panamá) ; Madden Dam (Canal Zone) ; and Almirante (Bocas del Toro).

\* ***Tonatia minuta* Goodwin**

= *Tonatia nicaraguae* Hall and Kelson

Uncommon, but rather widespread in Panama, possibly throughout the lowlands. Evergreen and deciduous forests and fruit groves. Specimens from Armila, Mandinga, and Puerto Obaldía (San Blas) ; Cerro Azul, 2000 feet (Panamá) ; Fort Sherman (Canal Zone) ; Guánico and Cerro Hoya, 1800 feet (Los Santos) ; 7 km. SSW. of Changuinola and Sibube (Bocas del Toro). *Tonatia nicaraguae* Goodwin is a synonym.

***Tonatia silvicola* D'Orbigny**

= *Tonatia amblyotis* Goldman

= *Tonatia sylvicola* Hall and Kelson

Uncommon, but rather widespread in Panama, possibly throughout the lowlands. Evergreen and deciduous forest. Roosts in hollow termite nests. Specimens from Boca de Río Paya, Río Esnápe, and Tacarcuna Village, 1950 feet (Darién) ; Armila and Puerto Obaldía (San Blas) ; Cerro Azul, 2000 feet (Panamá) ; Barro Colorado Island, Corozal, and Rodman Naval Station (Canal Zone) ; Guánico (Los Santos) ; and Bugaba (Chiriquí). The Panamanian subspecies is *T. s. silvicola* D'Orbigny. For use of the name *T. silvicola* see Husson (1962, p. 87).

\* ***Mimon cozumelae* Goldman**

Rare. Evergreen forest. Known in Panama only by specimens found roosting in a small cave on the banks of the Río Changuinola, 20 km. SSW. of Changuinola (Bocas del Toro).

\* † ***Mimon crenulatum* E. Geoffroy St.-Hilaire**

Rare. Found roosting in a hollow, rotting tree stump, and mist-netted over a forest stream and in a cacao grove. Evergreen forest. Specimens from Fort Gulick (Canal Zone) and Almirante and Sibube (Bocas del Toro). The Panamanian subspecies is *M. c. keenani* Handley.

\* ***Phyllostomus discolor* Wagner**

Common at lower elevations, probably throughout Panama. Evergreen forest and fruit groves. Specimens from Boca de Río Paya, Paya Village, and Tacarcuna Village, 1950 feet (Darién) ; Armila, Mandinga, and Puerto Obaldía (San Blas) ; Cerro Azul, 2000 feet, and Chilibrillo Caves (Panamá) ; Barro Colorado Island (Canal Zone) ; Guánico (Los Santos) ; Almirante, 7 and 14 km. SSW. of Changuinola, and Sibube (Bocas del Toro). The Panamanian subspecies is *P. d. discolor* Wagner.



**Phyllostomus hastatus** Pallas

Common in lowlands, up to 2000 feet, throughout Panama. Forest and fruit groves. Roosts in hollow trees, caves, and houses. Specimens from Boca de Cupe, Boca de Río Paya, Boca de Río Punusa, Capetí, El Real, and Jaqué (Darién); Armila and Puerto Obaldía (San Blas); Cabima, Cerro Azul, 2000 feet, Chepo, Chilibrillo Caves, Pacora, and Panamá (Panamá); Balboa, Barro Colorado Island, Fort Gulick, Juan Mina, Madden Dam, Paraíso, and Summit (Canal Zone); Guánico (Los Santos); Boquerón (Chiriquí); and Almirante, Boca del Drago, Cayo Agua, Isla Bastimentos, and Sibube (Bocas del Toro). The Panamanian subspecies is *P. h. panamensis* J. A. Allen.

**\*Phylloderma stenops** Peters

= *Phylloderma septentrionalis* Hall & Kelson

Rare. Evergreen forest. Specimens from Armila (San Blas). The Panamanian specimens combine the characters of the nominal species *P. stenops* Peters and *P. septentrionalis* Goodwin, but are nearer the former. Thus, the Panamanian subspecies is *P. s. stenops* Peters.

**Trachops cirrhosus** Spix

Common in lowlands and up to 2800 feet, probably throughout Panama. Flies over forest-bordered streams. Roosts in caves and houses. Specimens from Río Jesucito and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cerro Azul, 2000 feet, Chepo, Chilibrillo Caves, and Pacora (Panamá); Fort Sherman (Canal Zone); Guánico and Cerro Hoya, 2800 feet (Los Santos); and 7–20 km. SSW. of Changuinola, Isla Bastimentos, and Sibube (Bocas del Toro). The Panamanian subspecies is *T. c. cirrhosus* Spix.

**\*Chrotopterus auritus** Peters

Rare. Evergreen forest. Specimens from Tacarcuna Casita, 1500 feet (Darién), Armila (San Blas), and Cerro Azul, 2000 feet (Panamá). I doubt that subspecies are recognizable in *C. auritus*.

**Vampyrus spectrum** Linnaeus

= *Vampyrus spectrum* Goldman

Rare. Netted over forest-bordered streams and in fruit groves. Specimens from Tacarcuna Village, 1950 feet (Darién); Armila (San Blas); Boquerón (Chiriquí); and upper Río Changena, 2400 feet, and Sibube (Bocas del Toro). The subspecies *V. s. nelsoni* Goldman does not appear to be recognizable. I have compared the type with other specimens from Panama (7), Venezuela (4), Trinidad (10), Ecuador (1), and Peru (1). Although the Mexican and Central American specimens average smaller than those from South America, the difference is not great. The dental and cranial characteristics that Goldman supposed would distinguish *nelsoni* all prove to be individual variations.

\*† **Glossophaga commissarisi** Gardner

Common in the lowlands of eastern Panama, on the Caribbean coast of western Panama, and at medium elevations, possibly throughout Panama. Evergreen forest. Specimens from Boca de Cupe, Boca de Río Paya, Paya Village, and Tacarcuna Village, 1950 feet (Darién); Armila and Mandinga (San Blas); Candelaria Hydrographic Station and Cerro Azul, 2000 feet (Panamá); and Almirante, Boca del Drago, Cayo Agua, and Sibube (Bocas del Toro).

**Glossophaga soricina** Pallas

Abundant in the lowlands in central Panama and on the Pacific coast of western Panama and locally common on the Caribbean coast. Deciduous and evergreen forest. Roosts in caves, culverts, houses, hollow trees, and hollow logs. Specimens from Mandinga (San Blas); Colón and Portobelo (Colón); Isla Saboga, La Chorrera, Nueva Gorgona, Pacora, Panamá, and Panamá Viejo (Panamá); many localities throughout the Canal Zone; El Copé, Río Hato, and Santa Clara (Coclé); Guánico (Los Santos); Isla Canal de Afuera (Veraguas); and Almirante, Boca del Drago, 7 km. SSW. of Changuinola, Isla Bastimentos, Isla Colón, Isla Escudo de Veraguas, and Sibube (Bocas del Toro). The Panamanian subspecies is *G. s. leachii* Gray.

**Lonchophylla mordax** Thomas

= *Lonchophylla concava* Goldman

= *Lonchophylla concava* Hall and Kelson

Rare. Evergreen forest. Roosts in caves. Specimens from Cana, 2000 feet, and Tacarcuna Village, 1950 feet (Darién); and Armila and Puerto Obaldía (San Blas). The Panamanian subspecies is *L. m. concava* Goldman, which is only slightly differentiated from typical *L. mordax*.

**Lonchophylla robusta** Miller

Common. Eastern Panama and Caribbean lowlands of western Panama. Evergreen forest. Roosts in caves. Specimens from Cana, 2000 feet, Tacarcuna Casita, 2600 feet, and Tacarcuna Village, 1950 feet (Darién); Armila and Puerto Obaldía (San Blas); Cerro Azul, 2000 feet, Chilibrillo Caves (Panamá); Buena Vista (Colón); Barro Colorado Island, Salamanca Hydrographic Station and Summit (Canal Zone); and Almirante and Isla Bastimentos (Bocas del Toro).

\*† **Lonchophylla thomasi** J. A. Allen

Rare. Known in Panama by a single specimen netted in a riverside clearing at Boca de Río Paya (Darién).

\*† **Lionycteris spurrelli** Thomas

Rare. Evergreen forest. Specimens from Cana, 2000 feet (Darién) and Armila (San Blas). First taken in Panama by O. P. Pearson.

\* † **Anoura cultrata** Handley

Uncommon. Evergreen forest. Specimens from Tacarcuna Village, 1950 feet (Darién); Cerro Punta, 5300 feet (Chiriquí); and upper Río Changena, 2400 feet (Bocas del Toro).

\* **Anoura geoffroyi** Gray

Uncommon. Evergreen forest. Specimens from Cerro Hoya, 3000 feet (Los Santos); Cerro Punta, 5300 feet (Chiriquí); and upper Río Changena, 4800 feet (Bocas del Toro). The Panamanian subspecies is *A. g. lasiopyga* Peters.

\* **Hylonycteris underwoodi** Thomas

Rare. Known in Panama only by a specimen taken at Santa Clara, 4200 feet (Chiriquí) by F. A. Hartman.

\* **Lichonycteris obscura** Thomas

Rare. Evergreen forest and fruit groves. Specimens from Tacarcuna Village, 3200 feet (Darién); Armila (San Blas); and Almirante and upper Río Changena, 2400 feet (Bocas del Toro).

**Carollia castanea** H. Allen

= *Hemiderma castaneum* Goldman

= *Carollia castanea* Hall and Kelson (part.)

Common at lower elevations throughout Panama. Forest and fruit groves. Apparently most abundant in evergreen forest. Found roosting under overhanging stream bank and in mine. Specimens from Boca de Río Paya, Cana, 2000 feet, Paya Village, Río Setegantí, Tacarcuna Casita, 2600 feet, and Tacarcuna Village, 3200 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cerro Azul, 2000 feet (Panamá); Frijolito (Colón); Barro Colorado Island, Chiva Chiva, and Fort Kobbe (Canal Zone); Cerro Hoya, 3000 feet (Los Santos); and Almirante, Boca del Drago, 7 km. SSW. of Changuinola, and Sibube (Bocas del Toro).

*Carollia castanea* is monotypic. It has been confused with *Carollia subrufa* Hahn, but it can be easily distinguished from that species by its smaller size (forearm usually less than 38 mm.); duller, less sharply defined banding of dorsal hairs; occlusal outline of crown of inner lower incisor usually ovoid (wider than long) rather than triangular (longer than wide); first three lower post-canine teeth graded (increase in size from the first) rather than subequal;  $M_1$  almost flat-crowned (all cusps obsolete), significantly lower than adjacent teeth; second upper premolar without postero-external cusp. *Carollia castanea* ranges from Costa Rica through Panama to northern and western Colombia.

**Carollia perspicillata** Linnaeus

= *Hemiderma perspicillatum* Goldman

Abundant throughout the lowlands of Panama; uncommon to rare above

3000 feet. Ubiquitous. The Panamanian subspecies is *C. p. azteca* Sausure.

\* ***Carollia subrufa* Hahn**

= *Carollia castanea* Hall and Kelson (part.)

Locally abundant throughout eastern Panama and at high elevations and on the Caribbean coast of western Panama. Usually the most abundant species of *Carollia* above 3000 feet. Evergreen forest. Roosts in caves and in hollow trees. Specimens from Paya Village, Río Chucunaque, Río Setegantí, Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cerro Azul (Panamá); Cerro Punta, 5300 feet (Chiriquí); and Almirante, Boca del Drago, Cayo Agua, 7 km. SSW. of Changuinola, Isla Bastimentos, Isla Colón, upper Río Changena, 2400–4800 feet, and Sibube (Bocas del Toro).

*Carollia subrufa* has been confused with *Carollia castanea*, but actually it is most like and is more closely related to *Carollia perspicillata*. From *C. perspicillata*, *C. subrufa* differs in average smaller size (forearm 38–42 mm. vs. 41–45 mm.); average hairier forearm, tibia, and foot; average longer, silkier fur; less crowded and posteriorly more divergent tooth rows; reduced cusps of cheek teeth (especially protocone of M<sup>1</sup>); outer incisors not reduced; highest point of P<sup>4</sup> well ahead of the mid-length of the tooth. *Carollia subrufa* seems to be monotypic. It ranges from western Mexico to Colombia and Venezuela.

***Sturnira lilium* E. Geoffroy St.-Hilaire**

Abundant at lower elevations (sea level to about 4000 feet) throughout Panama. Forests and fruit groves. Specimens from Boca de Cupe, Boca de Río Paya, Paya Village, and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cerro Azul, 1800–2000 feet (Panamá); Quebrada Bonita (Colón); Cerro Hoya and Guánico (Los Santos); Volcán de Chiriquí (Chiriquí); and Almirante and Isla Bastimentos (Bocas del Toro). The Panamanian subspecies is *S. l. parvidens* Goldman. Specimens from Tacarcuna Village are larger than those from lower elevations in Darién and elsewhere in Panama and may represent an undescribed subspecies of *S. lilium*.

\* ***Sturnira ludovici* Anthony**

Abundant at higher elevations. Evergreen forest. Specimens from Cerro Malí, 4700 feet, and Tacarcuna Village, 1950 feet (Darién); Cerro Punta, 4600–5300 feet (Chiriquí); and upper Río Changena, 2400–5000 feet (Bocas del Toro).

***Uroderma bilobatum* Peters**

Abundant at lower elevations throughout Panama. Usually found near streams and in fruit groves. Roosts under palm leaves. Specimens from Boca de Cupe, Boca de Río Paya, Capetí, Chepigana, Jaqué, and Paya



Village (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Candelaria Hydrographic Station, Cerro Azul, 850 feet, Isla Saboga, Isla San José, Isla del Rey, La Chorrera, Pacora, Panamá, and Panamá Viejo (Panamá); Quebrada Bonita and Colón (Colón); Ancón, Barro Colorado Island, France Field, Río Indio, and Summit (Canal Zone); Guánico (Los Santos); El Copé, 1450 feet, and El Potrero (Coclé); Boquerón and Bugaba (Chiriquí); and Almirante, Boca del Drago, 7 km. SSW. of Changuinola, Isla Bastimentos, Punta de Peña, and Sibube (Bocas del Toro). The Panamanian subspecies is *U. b. bilobatum* Peters (= *U. convexum* Lyon).

\* † **Vampyrops dorsalis** Thomas

Uncommon. Specimens from Tacarcuna Village, 1950 feet (Darién). Evergreen forest. Netted over forest-bordered stream.

**Vampyrops helleri** Peters

= *Platyrrhinus helleri* Hall and Kelson

Abundant from sea level to 4000 feet throughout Panama. Forests and fruit groves. Specimens from Boca de Río Paya, Cana, 2000 feet, Jaque, Paya Village, Río Setegantí, Tacarcuna Casita, 1950 feet, Tacarcuna Laguna, 3000 feet, and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cabima, Cerro Azul, 2000 feet, Isla del Rey, and Isla San José (Panamá); Bas Obispo, Chiva Chiva, and Paraíso (Canal Zone); Cerro Hoya and Guánico (Los Santos); Isla Cébaco (Veraguas); and Almirante, Boca del Drago, Cayo Agua, 7 km. SSW. of Changuinola, Isla Colón, Punta de Peña, upper Río Changena, 2400 feet, and Sibube (Bocas del Toro). *Vampyrops zarhinus* H. Allen is a synonym.

\* **Vampyrops vittatus** Peters

= *Platyrrhinus vittatus* Hall and Kelson

Common at higher elevations. Evergreen forest. Specimens from Cerro Malí, 4700 feet, and Tacarcuna Village, 1950 feet (Darién); Cerro Punta, 5300 feet (Chiriquí); and upper Río Changena, 2400–5000 feet (Bocas del Toro).

**Vampyrodes caraccioli** Thomas

= *Vampyrodes major* Goldman

= *Vampyrodes major* Hall and Kelson

Common at medium elevations (1500–2500 feet) throughout Panama and usually less common at lower elevations (to sea level) in eastern Panama and on the Caribbean coast of western Panama. Evergreen forest. Specimens from Jaqué, Río Chucunaque, Río Setegantí, Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién); Armila and Puerto Obaldía (San Blas); Cerro Azul, 2000 feet (Panamá); Barro Colorado Island and San Pablo (Canal Zone); and Almirante, upper Río Changena, 2300–2600 feet, and Sibube (Bocas del Toro). The Panamanian subspecies is *V. c. major* G. M. Allen (= *V. ornatus* Thomas). *V. c. caraccioli* Thomas averages smaller.



**\* *Vampyressa nymphaea* Thomas**

Uncommon. Lower elevations in eastern Panama and on the Caribbean coast of western Panama. Evergreen forest. Specimens from Río Setegantí, Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Candelaria Hydrographic Station and Cerro Azul, 2000 feet (Panamá); Barro Colorado Island (Canal Zone); and Almirante and 7 km. SSW. of Changuinola (Bocas del Toro).

***Vampyressa pusilla* Wagner**

= *Vampyressa minuta* Goldman

= *Vampyressa thyone* Hall and Kelson

Uncommon. Lower elevations, possibly throughout Panama. Evergreen forest. Specimens from Cana, 2000 feet, Río Setegantí, Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cabima, Candelaria Hydrographic Station, and Cerro Azul, 2000 feet (Panamá); Barro Colorado Island (Canal Zone); Cerro Hoya, 2400–2800 feet (Los Santos); El Copé, 1400 feet (Coclé); and upper Río Changena, 2300 feet, and Sibube (Bocas del Toro). For the use of the name *V. pusilla* see Goodwin (1963, p. 8). The characters that are supposed to distinguish the subspecies of this species—*V. p. pusilla* Wagner, *V. p. thyone* Thomas (= *V. minuta* Miller), and *V. p. venilla* Thomas—are age rather than geographic variables. Thus, these names should be arranged as synonyms of *V. pusilla* Wagner.

**\*† *Vampyressa* species**

Specimens of an undescribed species of *Vampyressa* have been taken in evergreen forest on the upper Río Changena, 4800 feet (Bocas del Toro).

***Chiroderma salvini* Dobson**

Common at higher elevations. Evergreen forest. Specimens from Cana, 2000 feet, and Tacarcuna Village, 1950 feet (Darién); Cerro Azul, 2000 feet (Panamá); and upper Río Changena, 2400–4800 feet (Bocas del Toro).

**\*† *Chiroderma trinitatum* Goodwin**

Rare. Evergreen forest. Specimens from Tacarcuna Village, 1950 feet (Darién); Armila and Puerto Obaldía (San Blas); and upper Río Changena, 2400 feet (Bocas del Toro). The Panamanian subspecies is *C. t. gorgasi* Handley.

***Chiroderma villosum* Peters**

= *Chiroderma isthmicum* Goldman

= *Chiroderma isthmicum* Hall and Kelson

Uncommon at lower elevations throughout Panama. Forest and fruit groves. Specimens from Cana, 2000 feet, Jaqué, and Tacarcuna Village, 1950 feet (Darién); Armila, Mandinga, and Puerto Obaldía (San Blas); Cabima, Cerro Azul, 2000 feet, and Isla del Rey (Panamá); Barro Colorado

Island and Culebra (Canal Zone) ; Cerro Hoya and Guánico (Los Santos) ; and Almirante, Cayo Agua, and Sibube (Bocas del Toro). The Panamanian subspecies is *C. v. jesupi* J. A. Allen (= *C. isthmicum* Miller).

\* ***Ectophylla alba* H. Allen**

Rare. Evergreen forest and fruit groves. Specimens from Almirante, upper Río Changena, 2300–2400 feet, and Sibube (Bocas del Toro).

\* † ***Ectophylla macconnelli* Thomas**

Rare. Evergreen forest. Specimens from Tacarcuna Village, 1950 feet (Darién) and Almirante and Boca de Río Risco, 12 km. SSW. of Changuinola (Bocas del Toro). For notes on the use of the combination *Ectophylla macconnelli* in place of *Mesophylla macconnelli* see Goodwin and Greenhall (1962, p. 10). Individual variation among the Panamanian specimens exceeds the variation described by Goodwin and Greenhall (*op. cit.*) as geographic.

\* ***Artibeus aztecus* Andersen**

= *Artibeus cinereus* Hall and Kelson (part.)

Rare. Evergreen forest. Specimens from Cerro Punta, 5300 feet (Chiriquí). First collected in Panama by Charles M. Keenan and Vernon J. Tipton.

***Artibeus cinereus* Gervais**

= *Artibeus watsoni* Goldman (part.)

= *Artibeus cinereus* Hall and Kelson (part.)

Abundant. Lower and middle elevations (sea level to 4800 feet) throughout Panama, including off-shore islands. Ubiquitous. Roosts under leaves. The Panamanian subspecies is *A. c. watsoni* Thomas.

***Artibeus jamaicensis* Leach**

= *Artibeus planirostris* Goldman

Abundant at lower elevations (sea level to 3200 feet) throughout Panama, including off-shore islands. Ubiquitous. Roosts in hollow trees, caves, and houses. The Panamanian subspecies is *A. j. jamaicensis* Leach.

\* ***Artibeus lituratus* Olfers**

Abundant at lower elevations (sea level to 3200 feet) throughout Panama, including off-shore islands. Ubiquitous. The Panamanian subspecies is *A. l. palmarum* J. A. Allen and Chapman.

\* ***Artibeus toltecus* Saussure**

= *Artibeus watsoni* Goldman (part.)

= *Artibeus cinereus* Hall and Kelson (part.)

Common at higher elevations. Evergreen forest. Specimens from Cana, 2000 feet, and Tacarcuna Village, 1950 feet (Darién) ; Cerro Punta, 5300–5700 feet (Chiriquí) ; upper Río Changena, 2400–4800 feet (Bocas del Toro).

\* **Artibeus turpis** Andersen

= *Artibeus watsoni* Goldman (part.)

Common. Lower and middle elevations in eastern Panama and on the Caribbean coast of western Panama. Specimens from Boca de Río Paya, Jaqué, Río Chucunaque, Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién); Mandinga (San Blas); Cerro Azul, 2000 feet, and La Chorrera (Panamá); Barro Colorado Island, Fort Gulick, and Gatún (Canal Zone); Quebrada Bonita (Colón); and Almirante, Boca del Drago, and 7 km. SSW. of Changuinola (Bocas del Toro).

\* **Enchisthenes hartii** Thomas

Uncommon. Evergreen and deciduous forest. Specimens from Tacarcuna Village, 1950 feet (Darién); Quarry Heights (Canal Zone); and Cerro Hoya, 2600 feet (Los Santos).

\* **Centurio senex** Gray

Uncommon. Evergreen forest. Specimens from Tacarcuna Village, 1950 feet (Darién); Las Cumbres and Nueva Gorgona (Panamá); Barro Colorado Island and Cristóbal (Canal Zone); Cerro Hoya, 1800 feet (Los Santos); and Almirante and Sibube (Bocas del Toro). First taken in Panama by Carl Koford.

Family **Desmodidae**

**Desmodus rotundus** E. Geoffroy St.-Hilaire

Locally abundant throughout Panama, and on off-shore islands, from sea level to 5600 feet. Ubiquitous. Roosts in hollow trees, caves, and houses. The Panamanian subspecies is *D. r. murinus* Wagner.

\* † **Diaemus youngii** Jentink

Rare. Evergreen forest. Specimens from Armila (San Blas) and Isla Bastimentos (Bocas del Toro). The Panamanian subspecies is *D. y. cypselinus* Thomas.

**Diphylla ecaudata** Spix

= *Diphylla centralis* Goldman

Rare. Evergreen forest. Specimens from Boquete (Chiriquí) and Almirante and Sibube (Bocas del Toro). *Diphylla ecaudata* is probably monotypic (see Burt and Stirton, 1961, p. 37).

Family **Natalidae**

**Natalus stramineus** Gray

= *Natalus mexicanus* Goldman

= *Natalus mexicanus* Hall and Kelson

Rare. Roosts in caves. Specimens from Chilibrillo Caves (Panamá); Fort San Lorenzo (Canal Zone); Penonomé (Coclé); Isla Coiba (Veraguas).

The Panamanian subspecies is *N. s. mexicanus* Miller (= *N. s. saturatus* Dalquest and Hall). For the taxonomy of *N. stramineus* see Goodwin (1959).

#### Family Furipteridae

##### \*† *Furipterus horrens* F. Cuvier

Rare. Evergreen forest. Known in Panama only by specimens found roosting with *Mimon cozumelae* in a small cave on the banks of the Río Changuinola, 20 km. SSW. of Changuinola (Bocas del Toro).

#### Family Thyropteridae

##### \* *Thyroptera tricolor* Spix

Rare. Roosts in rolled *Heliconia* leaves. Specimens from Río Jesucito and Tacarcuna Village (Darién) ; Barro Colorado Island and Corozal (Canal Zone) ; and on trail from Chiriquicito to Boquete (Bocas del Toro). The Panamanian subspecies is *T. t. albiventer* Tomes (= *T. t. albigula* G. M. Allen).

#### Family Vespertilionidae

##### \* *Myotis albescens* E. Geoffroy St.-Hilaire

Common. Lowlands of eastern Panama and Caribbean coast of western Panama. Evergreen forest. Specimens from Boca de Río Paya and Tacarcuna Village, 1950 feet (Darién) ; San Pablo and Tabernilla (Canal Zone) ; and 7–20 km. SSW. of Changuinola and Sibube (Bocas del Toro).

##### \*† *Myotis chiloensis* Waterhouse

Rare. Evergreen forest. Roosts in caves. Known in Panama only by specimens from Cerro Punta, 5300–5800 feet (Chiriquí). First taken in Panama by Charles M. Keenan and Vernon J. Tipton. These specimens represent an undescribed subspecies.

##### *Myotis nigricans* Schinz

Abundant throughout at lower elevations, from sea level to at least 3200 feet elevation and perhaps ascending higher in the mountains. Roosts in caves and houses. The Panamanian subspecies is *M. n. nigricans* Schinz. It seems likely that *Myotis nigricans*, as now constituted, is a composite species.

##### \*† *Myotis simus* Thomas

Uncommon. Evergreen forest. Specimens from Boca de Río Paya and Tacarcuna Village, 1950 feet (Darién) ; Armila (San Blas) ; and Cerro Azul, 2000 feet (Panamá). The Panamanian subspecies is *M. s. riparius* Handley.

##### *Eptesicus brasiliensis* Desmarest

= *Eptesicus propinquus* Goldman

Uncommon, at low elevations in central and western Panama. Ever-

green forest. Roosts in houses. Specimens from Cerro Hoya (Los Santos); and 7 km. SSW. of Changuinola and Sibube (Bocas del Toro). The Panamanian subspecies is *E. b. propinquus* Peters.

\* **Eptesicus chiriquinus** Thomas

Uncommon, on the Caribbean coast of eastern Panama and at medium elevations throughout. Evergreen forest. Specimens from Tacarcuna Village, 1950 feet (Darién); Armila (San Blas); Cerro Azul, 2000 feet (Panamá); Boquete (Chiriquí); upper Río Changena, 2400 feet (Bocas del Toro).

**Eptesicus fuscus** Palisot de Beauvois

Rare, at high elevations in western Panama. Evergreen forest. Roosts in tree holes. Specimens from El Valle (Coclé); Boquete (Chiriquí); and upper Río Changena, 4800 feet (Bocas del Toro). The Panamanian subspecies is *E. f. miradorensis* H. Allen.

\*† **Eptesicus innoxius** Gervais

Rare, at low elevations on the Pacific coastal plain. Specimens from San Pablo (Canal Zone); Tocumen (Panamá); and Boquerón (Chiriquí).

**Rhogeessa tumida** H. Allen

= *Rhogeessa parvula* Hall and Kelson (part.)

Uncommon, at lower elevations. Open country. Roosts in houses. Specimens from La Palma (Darién); numerous localities (Canal Zone); Santa Clara (Coclé); Guánico (Los Santos); Bugaba (Chiriquí); and Almirante, 7 km. SSW. of Changuinola, and Isla Bastimentos (Bocas del Toro). The Panamanian subspecies is *R. t. tumida* H. Allen (Goodwin, 1958).

**Lasiurus borealis** Müller

= *Nycteris borealis* Goldman

Uncommon, although widely distributed both geographically and altitudinally. Netted over streams. Specimens from Tacarcuna Village, 1950 feet (Darién); Armila (San Blas); Balboa and Fort Clayton (Canal Zone); Calobré (Veraguas); Cerro Hoya, 1800 feet (Los Santos); and Boquete, 3500 feet, and Cerro Punta, 5300 feet (Chiriquí). The Panamanian subspecies is *L. b. frantzii* Peters.

\*† **Lasiurus castaneus** Handley

Rare. Evergreen forest. Specimens from Tacarcuna Village, 1950 feet (Darién) and Armila (San Blas).

**Lasiurus ega** Gervais

= *Dasypterus ega* Goldman

= *Dasypterus ega* Hall and Kelson

Rare. Specimens from Fort Clayton (Canal Zone); Cerro Hoya, 1800 feet (Los Santos); and Bugaba, 800 feet (Chiriquí). The Panamanian subspecies is *L. e. panamensis* Thomas. For notes on the taxonomy of this species, see Handley (1960, p. 473).



\*† **Lasiurus egregius** Peters

Rare. Evergreen forest. A specimen from Armila (San Blas) and the holotype from Santa Catarina, Brazil, described in 1870, are the only known specimens of this species.

Family **Molossidae**

**Molossops planirostris** Peters

= *Cynomops planirostris* Hall and Kelson

Uncommon. Roosts in houses. Specimens from Pacora and Panamá (Panamá); and Balboa, Cocoli, Fort Amador, Fort Clayton, La Boca, and Miraflores Locks (Canal Zone). The Panamanian subspecies is *M. p. planirostris* Peters. Specimens from Tacarcuna Village (Darién) probably represent another species of *Molossops*.

\* **Tadarida brasiliensis** I. Geoffroy St.-Hilaire

Uncommon. Roosts in caves. Specimens from Cerro Punta, 5700 feet, and Río Chiriquí Viejo at Palo Santo, 4200 feet (Chiriquí); and upper Río Changuena (Bocas del Toro). The Panamanian subspecies is *T. b. brasiliensis* I. Geoffroy St.-Hilaire.

\* **Tadarida yucatanica** Miller

Uncommon. Roosts in houses. Specimens from Pacora and Panamá (Panamá) and Miraflores (Canal Zone).

**Molossus bondae** J. A. Allen

Common at lower elevations in eastern Panama and on the Caribbean coast of western Panama. Openings in evergreen forest. Roosts in houses. Specimens from Tacarcuna Village (Darién); Escobal and Salud (Colón); Chiva Chiva, Fort Kobbe, Fort Sherman, and Juan Mina (Canal Zone); and Almirante, 7 km. SSW. of Changuinola, and Sibube (Bocas del Toro).

**Molossus coibensis** J. A. Allen

= *Molossus major* Hall and Kelson (part.)

Abundant at lower elevations in central Panama and on the Pacific coast of western Panama. Open country. Roosts in houses. Specimens from Isla Taboga, La Chorrera, Pacora, and Panamá (Panamá); Ancón, Balboa, Barro Colorado Island, Bohio, Chiva Chiva, Corozal, Culebra, Curundu, Fort Clayton, Fort Sherman, Gamboa, Gatún, Margarita, Paraíso, San Pablo, Summit, and Tabernilla (Canal Zone); Escobal, Frijoles, and Salud (Colón); Isla Coiba and Isla Gobernadora (Veraguas); and Boquerón (Chiriquí). It is possible that there is more than one species of pygmy *Molossus*. Therefore assignment of *M. coibensis* to any particular one on the basis of size alone is premature.

\* **Molossus nigricans** Miller

= *Molossus rufus* Hall and Kelson

Uncommon. Roosts in attics of houses. E. L. Tyson took specimens at

Alanje, 50 feet, Boquerón, 600 feet, 2 mi. W. of El Volcán, 4100 feet, and La Concepción, 800 feet (Chiriquí). *M. ater* E. Geoffroy St.-Hilaire (= *M. rufus* E. Geoffroy St.-Hilaire), *M. nigricans* Miller, and *M. pretiosus* Miller are similar and further study may show them to be conspecific.

***Molossus sinaloae* J. A. Allen**

Uncommon at lower elevations in eastern Panama and on the Caribbean coast of western Panama. Roosts in houses. Specimens from Boca de Cupe and El Real (Darién); Fort Amador and Fort Clayton (Canal Zone); and 7 km. SSW. of Changuinola and Punta de Peña (Bocas del Toro). The Panamanian subspecies is *M. s. trinitatus* Goodwin, a form which heretofore has been considered to be a distinct species confined to the island of Trinidad.

**\* *Promops centralis* Thomas**

Rare. Roosts in houses. Specimens have been taken by Charles M. Keenan and Vernon J. Tipton at Corozal, Fort Amador, and Fort Clayton (Canal Zone). *Promops centralis* Thomas, *P. occultus* Thomas, and *P. davidsoni* Thomas may be conspecific. The oldest name is *P. centralis*.

**\* † *Eumops amazonicus* Handley**

Rare. Known in Panama by a single specimen from Tacarcuna Village, 1950 feet (Darién). Netted over forest-bordered stream.

***Eumops auripendulus* Shaw**

= *Eumops glaucinus* Goldman

= *Eumops abrasus* Hall and Kelson

Uncommon. Roosts in houses. Specimens from Frijoles (Colón); Bohío, Empire, Fort Clayton, Fort Kobbe, Paraíso, and Summit (Canal Zone); and 7 km. SSW. of Changuinola (Bocas del Toro). For nomenclature, see Goodwin (1960).

***Eumops bonariensis* Peters**

= *Eumops nanus* Goldman

Rare. Specimens from Boquerón and Bugaba (Chiriquí). The Panamanian subspecies is *E. b. nanus* Miller.

**\* *Eumops glaucinus* Wagner**

Rare. Roosts in attics of houses. E. L. Tyson took specimens at David, 150 feet, and La Concepción, 800 feet (Chiriquí).

## Order PRIMATES

### Family Cebidae

**\* *Aotus bipunctatus* Bole**

Rare. Known only from the type locality, Paracoté, Azuero Peninsula (Veraguas). Very likely conspecific with *A. trivirgatus*.

**Aotus trivirgatus** Humboldt

= *Aotus zonalis* Goldman

Common in eastern Panama and possibly on the Caribbean coast of western Panama, mostly in evergreen forest. Arboreal. Sleeps in tree holes. Specimens from Boca de Cupe, Boca de Río Paya, Cana, 2000 feet, Tacarcuna Casita, 1500 feet, Tacarcuna Village, 1950 feet, and Tapalisa (Darién); Armila and Mandinga (San Blas); Pacora (Panamá); Alhajuela, Fort Kobbe, Gatún, Madden Dam, and Paraíso (Canal Zone); Salud (Colón); and Isla Bastimentos (Bocas del Toro). The Panamanian subspecies is *A. t. griseimembra* Elliot (= *A. zonalis* Goldman).

**Alouatta villosa** Gray

= *Alouatta coibensis* Goldman

= *Alouatta palliata* Goldman

Locally abundant throughout Panama from sea level to at least 5100 feet. Arboreal. Several subspecies occur in Panama: (1) *A. v. aequatorialis* Festa (= *A. p. inconsonans* Goldman), mainland (except Azuero Peninsula) and adjacent islands; (2) *A. v. coibensis* Thomas, Isla Coiba; (3) *A. v. trabeata* Lawrence, Azuero Peninsula, north to Capina and Parita (Herrera).

**Cebus capucinus** Linnaeus

Locally abundant throughout Panama from sea level to at least 6000 feet. Arboreal. Subspecies in Panama: (1) *C. c. capucinus* Linnaeus, from Cerro Bruja (Colón) and Cerro Azul (Panamá) eastward to Colombia; (2) *C. c. imitator* Thomas, from the Canal Zone westward into Costa Rica; Isla Coiba.

**Saimiri oerstedii** Reinhardt

Common. At low elevations on the Pacific coast of western Panama. Arboreal. Specimens from Boquerón, Bugaba, David, Isla Almiras, Isla Sevilla, and Río Coto region (Chiriquí). The Panamanian subspecies is *S. o. oerstedii* Reinhardt.

**Ateles fusciceps** Gray

= *Ateles dariensis* Goldman

Common. From near sea level to at least 5200 feet in the Río Bayano, Río Chucunaque, and upper Río Tuira basins in eastern Panama. Arboreal. Specimens from Cituro, Cerro Pirre, 5200 feet, Tapalisa, Río Mono, Río Setegantí, Tacarcuna Casita, 1500 feet, Tacarcuna Laguna, 3000 feet, and Tacarcuna Village, 1950 feet (Darién); and Río Bayano (Panamá). Seen at Armila (San Blas). The Panamanian subspecies is *A. f. robustus* J. A. Allen.

**Ateles geoffroyi** Kuhl

Uncommon at lower elevations, possibly throughout Panama except in the area inhabited by *A. fusciceps*. Arboreal. More shy and usually in

larger and more remote forests than other Panamanian monkeys. Subspecies in Panama: (1) *A. g. azuereensis* Bole, Azuero Peninsula (Veraguas); (2) *A. g. grisescens* Gray (= *Ateles rufiventris* Sclater?), lower portion of the Río Tuira basin and nearby lowlands (Darién); (3) *A. g. panamensis* Kellogg and Goldman, central and western Panama (Panamá, Colón, Canal Zone, Chiriquí, and Bocas del Toro).

### Family Callithricidae

#### *Saguinus geoffroyi* Pucheran

= *Leontocebus geoffroyi* Goldman

= *Marikina geoffroyi* auctorum

Abundant from sea level to at least 2000 feet in the Canal Zone and eastern Panama. Absent or locally distributed in western Panama (has been reported from Río Coto region at the base of the Burica Peninsula). Arboreal. Scrub forest and forest edges.

### Order EDENTATA

#### Family Myrmecophagidae

#### *Myrmecophaga tridactyla* Linnaeus

Rare. Although it may once have occurred throughout the lowlands of Panama, it is now confined to the less disturbed portions. Terrestrial. Specimens from Mandinga (San Blas); Gatún (Canal Zone); and Divalá (Chiriquí). The Panamanian subspecies is *M. t. centralis* Lyon.

#### *Tamandua tetradactyla* Linnaeus

= *Tamanduas tetradactyla* Goldman

Common. Probably throughout Panama from sea level to at least 5000 feet. Partly arboreal, partly terrestrial. The Panamanian subspecies is *T. t. chiriquensis* J. A. Allen.

#### *Cyclopes didactylus* Linnaeus

Uncommon. Probably at lower elevations throughout Panama. Arboreal; nocturnal. The Panamanian subspecies is *C. d. dorsalis* Gray.

### Family Bradypodidae

#### *Bradypus infuscatus* Wagler

= *Bradypus griseus* Goldman

= *Bradypus griseus* Hall and Kelson

= *Bradypus ignavus* Goldman

Common. Probably throughout Panama, including off-shore islands, at lower elevations (sea level to at least 2000 ft.). Arboreal. The Panamanian subspecies are: (1) *B. i. griseus* Gray, Canal Zone and western Panama; (2) *B. i. ignavus* Goldman, Darién.

**Choloepus hoffmanni** Peters

Common. Probably throughout Panama from sea level to at least 4800 feet. Arboreal. The Panamanian subspecies is *C. h. hoffmanni* Peters.

**Family Dasypodidae****Cabassous centralis** Miller

Rare. Possibly throughout Panama, but all specimen records are for the Canal Zone and vicinity. Terrestrial and burrowing. Often in rocky areas.

**Dasypus novemcinctus** Linnaeus

Common. Probably throughout Panama, from sea level to at least 5500 feet. Terrestrial and burrowing. The Panamanian subspecies is *D. n. fenestratus* Peters.

[The specimen of *Dasypus septemcinctus* Linnaeus found at Colón (Hamlett, 1939, p. 333) had probably escaped from captivity.]

**Order LAGOMORPHA****Family Leporidae****Sylvilagus brasiliensis** Linnaeus

= *Sylvilagus gabbi* Goldman

Common. Probably throughout Panama from sea level to at least 5300 feet. Terrestrial. Most often in open or scrubby country, but also in heavy forest. Subspecies in Panama: (1) *S. b. gabbi* J. A. Allen (= *S. b. consobrinus* Anthony). All of Panama except Darién and Isla del Rey. Specimens from Armila and Mandinga (San Blas); Cerro Azul, 2000 feet, and Río Majé (Panamá); Corozal, France Field, Gatún, Las Cáscadas, Lion Hill, and Summit (Canal Zone); Guánico (Los Santos); Isla Gobernadora (Veraguas); Boquerón, Boquete, Bugaba, and Divalá (Chiriquí); and Sibube (Bocas del Toro). (2) *S. b. incitatus* Bangs, Isla del Rey. (3) *S. b. messorius* Goldman. Specimens from Boca de Cupe, Cana, 1800 feet, Jaqué, Tacarcuna Casita, 1500 feet, Tacarcuna Village, 1950 feet, and Tapalisa (Darién). Specimens from Cerro Punta, 5300 feet (Chiriquí) may represent an undescribed subspecies.

**Order RODENTIA****Family Sciuridae****Sciurus granatensis** Humboldt

= *Sciurus hoffmanni* Goldman

= *Sciurus gerrardi* Goldman

Abundant. Throughout Panama at all elevations. Perhaps no other Panamanian mammal is so wide-ranging. In all sorts of forest. Arboreal, but spends much time on the ground. Subspecies in Panama: (1) *S. g.*



*chiriquensis* Bangs, western Panama, from 6 mi. E. of El Valle (Panamá) and Guánico (Los Santos) west into Costa Rica; (2) *S. g. morulus* Bangs (= *S. g. choco* Goldman), Canal Zone and eastern Panama. The population that has hitherto borne the prior name *S. g. morulus* is an intergrade between the small, plain-colored *S. g. chiriquensis* and the large, varicolored *S. g. choco*, but is more like the latter.

### ***Sciurus variegatoides* Ogilby**

Abundant at lower elevations in the Canal Zone and western Panama. Fruit groves, scrub, and semi-open country. Arboreal. Panamanian subspecies: (1) *S. v. helveolus* Goldman. Pacific coast of central Panama. Specimens from Chiva-Chiva, Cocoli, Corozal, Empire Range, Fort Clayton, Pacific, Paraíso, and Summit (Canal Zone); Arraiján, La Chorrera, Nuevo Emperador, and Panamá (= Calidonia) (Panamá); Parita (Herrera); and Santiago (Veraguas). (2) *S. v. melania* Gray. Pacific coast of western Panama. Specimens from Guánico (Los Santos); Pesé (Herrera); Isla Cébaco, Río Mariato, and Soná (Veraguas); and Boquerón, Boquete, 2000 feet, Bugaba, David, Divalá, Isla Brava, Isla Insólita, Isla Sevilla, and Remédios (Chiriquí). (3) *S. v. thomasi* Nelson. Caribbean coast of western Panama. Specimens from Almirante and 7 km. SSW. of Changuinola (Bocas del Toro).

### ***Syntheosciurus brochus* Bangs**

Rare. Fog forest. Known only from the upper Caribbean slope of the Continental Divide, north of Boquete, 7000 feet (Bocas del Toro).

### ***Microsciurus alfari* J. A. Allen**

Uncommon. Probably occurs throughout the forested parts of Panama. Arboreal. Diurnal. Subspecies in Panama: (1) *M. a. browni* Bangs. Pacific coast of western Panama. Specimens from Bugaba, 600 feet, Quebrada Santa Clara, 3600–4200 feet, Río Gariché, 5300 feet, Sereno, 3600–3700 feet, and Siolo, 4100–4300 feet (Chiriquí). (2) *M. a. fuscus* Thomas. Extreme southeastern Panama, south and west of the Río Tuirá. Specimens from Cana, 2000 feet, Cerro Sapo, and Río Setegantí, 2600 feet (Darién). (3) *M. a. venustulus* Goldman. Central Panama and the Caribbean coast of western Panama. Specimens from Mandinga (San Blas); Portobelo (Colón); Cerro Azul, 2000–2500 feet, and Río Pequení (Panamá); Barro Colorado Island and Gatun (Canal Zone); and Almirante and upper Río Changuena, 5000 feet (Bocas del Toro). (4) Specimens from Armila (San Blas) and Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién), represent an undescribed subspecies.

### ***Microsciurus mimulus* Thomas**

- = *Microsciurus boquetensis* Goldman
- = *Microsciurus boquetensis* Hall and Kelson
- = *Microsciurus isthmius* Goldman
- = *Microsciurus isthmius* Hall and Kelson

Rare. In fog forest possibly throughout Panama. Subspecies in Panama: (1) *M. m. boquetensis* Nenson. Cerro Malí, 4900 feet, and Tacarcuna Village, 1950 feet (Darién); Cerro Azul, 2500–3000 feet (Panamá); and high ridges above Boquete (Chiriquí and Bocas del Toro). (2) *M. m. isthmus* Nelson (= *M. m. vivatus* Goldman). Specimens from Cana, 3500 feet, 20 mi. S. of Cana, 5000 feet, Cerro Sapo, 3000 feet, and Río Jaqué (Darién).

#### Family Geomyidae

##### **Macrogeomys cavator** Bangs

= *Macrogeomys pansa* Goldman

Locally common. Extreme western Panama. Fossorial. Mostly in fields. Subspecies in Panama: (1) *M. c. cavator* Bangs. Boquete, 4800 feet, and Cerro Punta, 5300–7800 feet (Chiriquí). (2) *M. c. pansa* Bangs. Bugaba, 600 feet (Chiriquí).

##### **Macrogeomys dariensis** Goldman

Abundant in the lower Río Chucunaque and upper Río Tuira basins in eastern Panama. Fossorial. Fields, fruit groves, and forest. Specimens from Boca de Cupe, 250 feet, Boca de Río Paya, 500 feet, Cana, 2000–2500 feet, Tacarcuna region, 1500–2500 feet, and Tapalisa (Darién). Mounds seen at Yavisa.

#### Family Heteromyidae

##### **Liomys adpersus** Peters

Abundant in the semi-arid savannah country of the Pacific coast of western Panama. Open thorny scrub and weedy fields. Terrestrial. Specimens from Cerro Azul, 1500 feet, and Chepo (Panamá); Albbrook Field, Balboa, Chiva Chiva, Cocoli, Curundu, Empire, Farfan, Fort Clayton, Fort Kobbe, Madden Forest, and Summit (Canal Zone); Guánico (Los Santos); and Paracoté and Santa Fé (Veraguas).

##### **Heteromys australis** Thomas

Abundant. Lower elevations in eastern Panama. Forest. Terrestrial. Subspecies in Panama: (1) *H. a. conscius* Goldman. Specimens from Boca de Río Paya, 500 feet, Cana, 1800–2000 feet, Río Setegantí, 2600 feet, Tacarcuna Casita, 1500–1700 feet, and Tacarcuna Village, 1950 feet (Darién). (2) *H. a. pacificus* Pearson. Known only from Amagal, 1000 feet, S. of Guayabo Bay (Darién).

##### **Heteromys desmarestianus** Gray

Common at higher elevations throughout, and to sea level on the Caribbean coast and in Chiriquí (no specimens have been taken elsewhere on the Pacific coast). Terrestrial. Forest, usually evergreen. Subspecies in Panama: (1) *H. d. chiriquensis* Enders. High elevations in extreme west-

ern Panama. Specimens from Cerro Pando and Cerro Punta, 6800–7800 feet (Chiriquí). (2) *H. d. crassirostris* Goldman. High elevations in extreme eastern Panama. Specimens from Cerro Malí (= “Mount Tacarcuna”), 4900 feet, and Cerro Pirre, 4500–5000 feet (Darién). (3) *H. d. panamensis* Goldman. Medium elevations in central Panama. Specimens from Cerro Azul, 2000–3000 feet (Panamá); and Cerro Bruja, 2000 feet (Colón). (4) *H. d. repens* Bangs. Lower and middle elevations in western Panama. Specimens from Boquerón and Boquete, 4000 feet (Chiriquí). (5) *H. d. zonalis* Goldman. Lower elevations in central Panama and on the Caribbean coast of western Panama. Specimens from Fort Sherman, Gatun, Madden Dam, and Río Indio (Canal Zone); Cerro Campana, 6 mi. E. of El Valle, and Maxon Ranch, Río Trinidad (Panamá); Salud (Colón); and Almirante, 7 km. SSW. of Changuinola, and upper Río Changena, 2300–2600 feet (Bocas del Toro). (6) Specimens from the San Blas coast represent an undescribed subspecies.

### Family Cricetidae

#### *Oryzomys albicularis* Tomes

- = *Oryzomys devius* Goldman
- = *Oryzomys devius* Hall and Kelson
- = *Oryzomys pirrensis* Goldman
- = *Oryzomys pirrensis* Hall and Kelson

Uncommon. High elevations in eastern and western Panama. Fog forest. Terrestrial. Subspecies in Panama: (1) *O. a. devius* Bangs. Specimens from Boquete, 4000–5000 feet, and Cerro Punta, 6800–7800 feet (Chiriquí); and upper Río Changena, 4800–5000 feet (Bocas del Toro). (2) *O. a. pirrensis* Goldman. Specimens from Cerro Malí (= “Mt. Tacarcuna”), 4900 feet, and Cerro Pirre, 4500 feet (Darién).

#### *Oryzomys alfaroi* J. A. Allen

Uncommon. Higher elevations in eastern and western Panama. Evergreen forest. Terrestrial. Subspecies in Panama: (1) *O. a. alfaroi* J. A. Allen. Specimens from Boquete, 4000 feet, Cerro Punta, 5000–5800 feet, and El Volcán, 4200 feet (Chiriquí); and upper Río Changena, 2400 feet (Bocas del Toro). (2) *O. a. dariensis* Goldman. Specimens from Cana, 2000–2500 feet, Cerro Malí (= “Mt. Tacarcuna”), 4800 feet, Tacarcuna Casita, 1500 feet, and Tacarcuna Village, 1950 feet (Darién).

#### \* *Oryzomys bicolor* Tomes

- = *Oryzomys endersi* Hall and Kelson
- = *Oryzomys trabeatus* Hall and Kelson

Rare. At lower elevations in the Canal Zone and eastern Panama. Evergreen forest. Arboreal. Specimens from Guayabo, Pelisa, 500 feet, and Río Jesucito (Darién); Armila and Puerto Obaldía (San Blas); Cerro Azul, 2000 feet (Panamá); and Barro Colorado Island and Fort Sherman (Canal

Zone). The Panamanian subspecies is *O. b. trabeatus* G. M. Allen and Barbour (= *Oryzomys endersi* Goldman). For notes on the nomenclature of this species see Hershkovitz (1960, p. 518).

### ***Oryzomys bombycinus* Goldman**

Rare. Middle elevation evergreen forest. Terrestrial. Subspecies in Panama: (1) *O. b. alleni* Goldman. Upper Río Changena, 2400 feet (Bocas del Toro). (2) *O. b. bombycinus* Goldman. Cerro Azul, 2000–3000 feet, and 6 mi. E. of El Valle (Panamá) and Cerro Bruja, 1000 feet (Colón). (3) *O. b. orinus* Pearson. Cerro Pirre (Darién).

### ***Oryzomys caliginosus* Tomes**

Abundant. Lower elevations in eastern Panama and on the Caribbean coast of western Panama (seemingly absent from most of the Pacific coast of western Panama). Evergreen forest and clearings. Subspecies in Panama: (1) *O. c. chrysomelas* J. A. Allen. Western Panama. Specimens from Bugaba, 600 feet (Chiriquí) and Almirante, Boca del Drago, 7 km. SSW. of Changuinola, Isla Bastimentos, and upper Río Changena, 2400 feet, (Bocas del Toro). (2) *O. c. idoneus* Goldman. Central and eastern Panama. Specimens from Cana, 1800–2800 feet, El Real, Tacarcuna Casita, 1500–1700 feet, Tacarcuna Laguna, 3000 feet, and Tacarcuna Village, 1950 feet (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000–2500 feet, Cerro Campana, 6 mi. E. of El Valle, and Río Trinidad (Panamá); and Empire Range, Fort Sherman, and Gatún (Canal Zone).

### ***Oryzomys capito* Olfers**

- = *Oryzomys talamancae* Goldman
- = *Oryzomys talamancae* Hall and Kelson
- = *Oryzomys laticeps* auctorum

Abundant. At lower elevations, probably throughout Panama, but not recorded on the Pacific coast west of the Azuero Peninsula. Forest, both evergreen and deciduous. Terrestrial. Subspecies in Panama: (1) *O. c. carrikeri* J. A. Allen. Caribbean coast of western Panama. Specimens from Almirante and Boca del Drago (Bocas del Toro). (2) *O. c. talamancae* J. A. Allen (= *Oryzomys panamensis* Thomas). Central and eastern Panama. Specimens from Boca de Río Paya, Cana, 2000 feet, Cituro, Jaqué, Río Setegantí, 2600 feet, Tacarcuna Casita, 1500 feet, Tacarcuna Village, 3200 feet, and Tapalisa (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000 feet, Cerro Campana, 6 mi. E. of El Valle, and Río Trinidad (Panamá); Cerro Bruja (Colón); Fort Sherman, Gatún, Madden Road, and Mohinga Valley (Canal Zone); and Cerro Hoya, 3000 feet (Los Santos). For use of the name *capito*, see Hershkovitz (1960, p. 544) and Cabrera (1961, p. 387).

### ***Oryzomys concolor* Wagner**

- = *Oryzomys tectus* Goldman
- = *Oryzomys tectus* Hall and Kelson

Uncommon. Lower elevations possibly throughout Panama. Semi-



arboreal, in tall grass and herbaceous growth in savannas and forest openings. Specimens from Cana, 2000 feet, and Tacarcuna Village, 1950 feet (Darién); Armila and Mandinga (San Blas); Corozal and Madden Road (Canal Zone); and Bugaba, 800 feet (Chiriquí). The Panamanian subspecies is *O. c. tectus* Thomas (= *O. frontalis* Goldman). For notes on the nomenclature of this species see Hershkovitz (1960, p. 515).

### ***Oryzomys fulvescens* Saussure**

Common. Confined largely to the Pacific slope of central and western Panama. Savannas and forest openings. Terrestrial. Subspecies in Panama: (1) *O. f. costaricensis* J. A. Allen. Lower elevations. Specimens from Cerro Azul, 2000–3000 feet, Cerro Campana, 6 mi. E. of El Valle, La Chorrera, Pacora, and Panamá Viejo (Panamá); Albroom Field, Barro Colorado Island, Curundu, Fort Clayton, and Fort Kobbe (Canal Zone); and Cerro Punta, 4800–5600 feet (Chiriquí). (2) *O. f. vegatus* Bangs. Higher elevations, western Panama. Specimens from Boquete, 3800–4800 feet, and Cerro Punta, 6800–7800 feet (Chiriquí); and upper Río Changena, 4800 feet (Bocas del Toro).

### ***Oryzomys palustris* Harlan**

- = *Oryzomys gatumensis* Goldman
- = *Oryzomys gatumensis* Hall and Kelson
- = *Oryzomys azuerensis* Hall and Kelson

Rare. Cane fields and marshy areas. Terrestrial. Subspecies in Panama: (1) *O. p. azuerensis* Bole. Specimens from Guánico (Los Santos) and Paracoté (Veraguas). (2) *O. p. gatumensis* Goldman. Specimens from Pacora (Panamá) and Gatún (Canal Zone). Hall (1960, p. 172) has pointed out the conspecificity of *O. couesi* and *O. palustris*. Recently acquired specimens show that *O. azuerensis* and *O. gatumensis*, also, should be treated as subspecies of *O. palustris*.

### ***Neacomys tenuipes* Thomas**

- = *Neacomys pictus* Goldman
- = *Neacomys pictus* Hall and Kelson

Rare. In grass and small bushes in clearings and forest openings. Terrestrial. Specimens from Cana, 1800–2000 feet, and Tacarcuna Village, 1950 feet (Darién). The Panamanian subspecies is *N. t. pictus* Goldman. For use of the name *tenuipes* for this species see Cabrera (1961, p. 412). My own studies confirm this usage.

### ***Nectomys alfari* J. A. Allen**

Common. At lower elevations in eastern Panama and on the Caribbean coast of western Panama. In marshes, abandoned cane fields, and other forest openings. Terrestrial. Subspecies in Panama: (1) *N. a. alfari* J. A. Allen. Specimens from Cerro Azul, 2000 feet, Cerro Campana, 3000 feet, and 6 mi. E. of El Valle (Panamá); Santa Fé (Veraguas); and Almi-



rante and upper Río Changena, 2400 feet (Bocas del Toro). (2) *N. a. efficax* Goldman. Specimens from Boca de Río Paya, Cana, 1800–2000 feet, and Tacarcuna Village, 1950 feet (Darién) ; and Mandinga (San Blas).

### **Rhipidomys scandens** Goldman

Rare. Known only by the holotype from Cerro Pirre, 5000 feet (Darién). Arboreal.

### **Tylomys panamensis** Gray

Uncommon. At lower elevations possibly throughout Panama. Arboreal. It seems unlikely that there is more than one species of *Tylomys* in Panama, but there are still too few specimens to enable one to be certain of this. *Tylomys panamensis* Gray is the prior name. The nominal species in Panama are: (1) *T. fulviventer* Anthony. Tacarcuna Laguna, 3000 feet, and Tacarcuna Village, 1950–3600 feet (Darién). (2) *T. panamensis* Gray. Cana, 2000 feet, and Boca de Río Paya (Darién). (3) *T. watsoni* Thomas. Specimens from Armila (San Blas) ; Cerro Bruja, 1000 feet, and Salud (Colón) ; Cerro Azul, 2000–3000 feet, and 6 mi. E. of El Valle (Panamá) ; Fort Sherman, Mohinga Valley, and Madden Dam (Canal Zone) ; Santa Fé (Veraguas) ; and Boquerón, Boquete, and Bugaba, 800 feet (Chiriquí). A specimen from Isla Bastimentos (Bocas del Toro) may represent an undescribed form.

### **Nyctomys sumichrasti** Saussure

Rare. Evergreen forest of central and western Panama. Arboreal. Specimens from Cerro Azul, 2000 feet (Panamá) ; Camp Chagres, Madden Lake (Canal Zone) ; Cerro Punta, 5300 feet, and Boquete, 4000 feet (Chiriquí) ; and Cayo Agua and upper Río Changena, 2400 feet (Bocas del Toro). May occur also on the Azuero Peninsula. The subspecies in Panama is *N. s. nitellinus* Bangs.

### **Reithrodontomys creper** Bangs

Abundant. High elevations in western Panama. Fog forest and openings. Mainly terrestrial. Specimens from Casita Alta, 7400 feet, Cerro Punta, 6800–7800 feet, and Volcán de Chiriquí, 10,400 feet (Chiriquí).

### **\*Reithrodontomys darienensis** Pearson

Uncommon, lower elevations on Pacific coast of eastern Panama. Forest clearings and other openings. Mainly arboreal. Specimens from Cana, 2000 feet (Darién) ; Cerro Azul, 1000 feet, 4 mi. W. of Chepo, and Pacora (Panamá) ; Gatún (Canal Zone) ; and Cerro Hoya, 3000 feet (Los Santos). Possibly also Isla Cébaco (Veraguas).

### **Reithrodontomys mexicanus** Saussure

Uncommon. Higher elevations in western Panama. Evergreen forest and forest openings. Partly arboreal. Subspecies in Panama: (1) *R. m.*

*garichensis* Enders and Pearson. East and north of Río Chiriquí Viejo. Specimens from Boquerón, Boquete, 3500–4000 feet, Cerro Pando, Cerro Punta, 4500–7800 feet, and Río Gariché, 5 mi. SW. of El Volcán, 3200 feet (Chiriquí); and upper Río Changena, 4800 feet (Bocas del Toro). (2) *R. m. potrerograndei* Goodwin. Río Chiriquí Viejo, Wald, 3800 feet (Chiriquí).

**Reithrodontomys sumichrasti** Saussure

= *Reithrodontomys australis* Goldman

Common. Higher elevations in western Panama. Mostly in fields and forest clearings. Terrestrial. Specimens from Boquete, 4000 feet, Cerro Punta, 5000–7800 feet, El Volcán, and Volcán de Chiriquí, 10,300 feet (Chiriquí). The Panamanian subspecies is *R. s. vulcanius* Bangs.

**Peromyscus flavidus** Bangs

Rare. Western Panama. Forest. Terrestrial. Specimens from Boquete, 3000–5000 feet (Chiriquí); and upper Río Changena, 4800 feet (Bocas del Toro).

**Peromyscus nudipes** J. A. Allen

Abundant. High elevations in western Panama. Evergreen forest. Terrestrial. Specimens from Boquete, 4000–7500 feet, Cerro Punta, 5000–7800 feet, and El Volcán (Chiriquí); and upper Río Changena, 2400–4800 feet (Bocas del Toro). The Panamanian subspecies is *P. n. nudipes* J. A. Allen (= *Peromyscus cacabatus* Bangs).

**Peromyscus pirrensis** Goldman

Uncommon. High elevations in eastern Panama. Evergreen forest. Terrestrial. Specimens from Cerro Malí (=“Mt. Tacarcuna”), 4900 feet, Cerro Pirre, 3500–5200 feet, and Tacarcuna Village, 1950 feet (Darién). The large *Peromyscus* inhabiting the higher elevations on the Azuero Peninsula may be this species.

**Zygodontomys microtinus** Thomas

= *Zygodontomys cherriei* Goldman

= *Zygodontomys cherriei* Hall and Kelson

Abundant. Savannas and cleared lands at low elevations on the Pacific coast. Terrestrial. Subspecies in Panama: (1) *Z. m. cherriei* J. A. Allen. Western Panama. Specimens from Boquerón, Bugaba, and El Banco (Chiriquí). (2) *Z. m. ventriosus* Goldman. Central and eastern Panama. Specimens from El Real (Darién); Cerro Azul, 2000 feet, Pacora, and Panamá Viejo (Panamá); Barro Colorado Island, Chico, Corozal, Curundu, Empire, Fort Clayton, Fort Kobbe, Fort Sherman, France Field, Gamboa, Gatún, Madden Wye, Red Tank, Summit, and Tabernilla (Canal Zone); El Valle (Coclé); Guánico (Los Santos); and Altos Cacao, 1500 feet, and Paracoté (Veraguas). Possibly also Isla Cébaco (Veraguas).

**Zygodontomys seorsus** Bangs

Abundant. Dense swampy woods. Terrestrial. Isla del Rey.

**Scotinomys teguina** Alston

Abundant. Middle elevations on the Pacific slope of western Panama. Fields and forest clearings. Terrestrial. Subspecies in Panama: (1) *S. t. apricus* Bangs. Boquete, 4000 feet (Chiriquí). (2) *S. t. episcopi* Enders and Pearson. West of Río Chiriquí Viejo, 3800–5600 feet: Cerro Pando, Río Santa Clara, and Siolo (Chiriquí). (3) *S. t. garichensis* Enders and Pearson. East of Río Chiriquí Viejo, 3200–6000 feet: Cerro Punta, 5300–6000 feet, Llano Verde, and Río Gariché, 3200 feet (Chiriquí). (4) *S. t. leridensis* Enders and Pearson. Boquete, 5000–7000 feet (Chiriquí).

**Scotinomys xerampelinus** Bangs

Abundant. High elevations in western Panama. Fog forest and forest openings. Terrestrial. Cerro Punta, 6800–7800 feet, and Volcán de Chiriquí, 10,400 feet (Chiriquí).

**Sigmodon hispidus** Say and Ord

= *Sigmodon hispidus* Goldman

= *Sigmodon austerulus* Goldman

Abundant. Low elevations. Central Panama, the Pacific coast of western Panama, and the western extreme of the Caribbean coast. Savannas and forest openings. Terrestrial. Specimens from the Canal Zone and the Pacific coast are of the subspecies *S. h. chiriquensis* J. A. Allen: Cerro Azul, 1000 feet and Cerro Campana (Panamá); many localities, throughout the Canal Zone; El Valle (Coclé); Cerro Hoya, 3000 feet, and Guánico (Los Santos); Río Mariato and Santa Fé (Veraguas); and Boquerón and Bugaba (Chiriquí). Specimens from Almirante and 7 km. SSW. of Changuinola (Bocas del Toro) represent an undescribed subspecies. The nominal species "*S. austerulus* Bangs", known only by the holotype, is now thought a synonym of *S. h. borucae* J. A. Allen and to have come from Costa Rica, not the summit of Volcán de Chiriquí as labeled (Enders, 1953, p. 508).

**\* Rheomys hartmanni** Enders

Rare. Known only by two specimens from the hot springs on the Río Cotito, 4900 feet (Chiriquí). Aquatic.

**Rheomys raptor** Goldman

Rare. Known only by three specimens from Cerro Pirre, 4500 feet (Darién). Aquatic.

**\* Rheomys underwoodi** Thomas

Rare. One specimen from El Volcán (Chiriquí). Aquatic.

**Family Muridae****\* Rattus norvegicus** Berkenhout

Uncommon. Urban. Terrestrial. Specimens from Cristóbal and Mount Hope (Canal Zone). Introduced.

**Rattus rattus** Linnaeus

Abundant. Now found around human habitations and in some wild areas throughout much, if not all, of Panama. Partly terrestrial, partly arboreal. Three color phases are encountered: black (= "*R. r. rattus* Linnaeus"), brown with gray belly (= "*R. r. alexandrinus* E. Geoffroy St.-Hilaire"), and brown with white belly ("*R. r. frugivorus* Rafinesque"). Introduced.

**Mus musculus** Linnaeus

Uncommon. In human habitations. Specimens from El Valle (Coclé) Isla del Rey, Las Cumbres, and Río Avaso (Panamá); Fort Clayton (Canal Zone); and Cerro Punta, 5000 feet (Chiriquí). Introduced.

Family **Erethizontidae****Coendou mexicanus** Kerr

= *Coendou mexicanum* Goldman

In western Panama, from high elevations on the Pacific slope (common) to near sea level on the Caribbean coast (rare). Arboreal. Specimens from Boquete and Cerro Punta, 5300–6200 feet (Chiriquí), and Sibube (Bocas del Toro). The Panamanian subspecies is *C. m. laenatus* Thomas.

**Coendou rothschildi** Thomas

Uncommon. At lower elevations, possibly throughout Panama, except on the Caribbean coast of western Panama. Arboreal. Specimens from Boca de Río Paya (Darién); Armila (San Blas); Barro Colorado Island, Cativá Road, Fort Davis, Fort Kobbe, Fort Sherman, France Field, Gatún, Río Indio, and Tabernilla (Canal Zone); Parita (Herrera); Guánico (Los Santos); and Boquerón, Isla Brava, and Isla Sevilla (Chiriquí).

Family **Hydrochaeridae****Hydrochaeris hydrochaeris** Linnaeus

= *Hydrochoerus isthmius* Goldman

= *Hydrochaeris isthmius* Hall and Kelson

Uncommon. Eastern Panama. Semiaquatic. Stream banks and marshes. Specimens or observations from El Real, Marragantí, and Río Setegantí, 2600 feet (Darién); 15 mi. E. of Panamá (Panamá); and Juan Mina (Canal Zone). The Panamanian subspecies is *H. h. isthmius* Goldman.

Family **Dasyproctidae****Agouti paca** Linnaeus

= *Cuniculus paca* Goldman

Common throughout Panama except where it has been excessively



hunted. Forest. Terrestrial. Specimens from Boca de Río Paya, Cana, 2000 feet (observation), and Tacarcuna Village, 1950 feet (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000 feet (Panamá); Barro Colorado Island, Gatún, and Río Indio (Canal Zone); Cerro Hoya, 2800–3000 feet (Los Santos); Cerro Punta, 5300 feet, and Divalá (Chiriquí); and Almirante, Boca del Drago, Cayo Agua, Isla Bastimentos, and Sibube (Bocas del Toro). The Panamanian subspecies is *A. p. virgatus* Bangs.

### ***Dasyprocta coibae* Thomas**

Common. Known only on Isla Coiba. Forest. Terrestrial.

### ***Dasyprocta punctata* Gray**

= *Dasyprocta callida* Goldman

Common throughout Panama. At all elevations, though more common in lowlands. Forest. Terrestrial. Subspecies in Panama: (1) *D. p. bellula* Kellogg. Isla San José. (2) *D. p. callida* Bangs. Isla Pedro Gonzalez and Isla del Rey. (3) *D. p. dariensis* Goldman. Eastern Panama. Specimens from Aruza, Boca de Cupe, Boca de Río Paya, Cana, Cerro Pirre, 5200 feet, Chepigana, Cituro, El Real, and Río Chucunaque (Darién); Armila and Mandinga (San Blas); and Ancón Hill (Canal Zone). (4) *D. p. isthmica* Alston. Central Panama and at higher elevations in western Panama. Specimens from Cerro Azul, 2000 feet, and Río Trinidad (Panamá); Colón (Colón); Barro Colorado Island, Cocoli, Fort Sherman, Gamboa, Gatún, Madden Dam, Paraíso, and Río Indio (Canal Zone); and Boquete (Chiriquí). (5) *D. p. nuchalis* Goldman. Pacific lowlands of western Panama, except the Azuero Peninsula. Specimens from Bugaba and Divalá (Chiriquí). (6) *D. p. pallidiventrís* Bole. Azuero Peninsula. Specimens from Cerro Hoya, 2600–3000 feet, and Guánico (Los Santos); and Isla Cébacó and Paracoté (Veraguas). (7) *D. p. richmondi* Goldman. Caribbean coast of western Panama. Specimens from Almirante, 7 km. SSW. of Changuinola, and Sibube.

## **Family Echimyidae**

### ***Proechimys semispinosus* Tomes**

Abundant throughout the forested portions of Panama at lower elevations. Terrestrial. Subspecies in Panama: (1) *P. s. burrus* Bangs. Isla del Rey. (2) *P. s. goldmani* Bole. Azuero Peninsula. Specimens from Cerro Viejo, Paracoté and Río Mariato (Veraguas). (3) *P. s. ignotus* Kellogg. Isla San José. (4) *P. s. panamensis* Thomas (= *P. s. chiriquinus* Thomas). Lowlands throughout, except on the Azuero Peninsula. Specimens from Boca de Cupe, Boca de Río Paya, Cana, 2000 feet, Cituro, El Real, Río Chucunaque, Tacarcuna Village, 1950 feet, and Tapalisa (Darién); Armila and Mandinga (San Blas); Cerro Azul, Chimán, and Río Trinidad (Panamá); many localities throughout the Canal Zone; Boquerón, Bugaba, 800 feet, and Divalá (Chiriquí); and Almirante, Boca del Drago, 7 km. SSW. of Changuinola, and Isla Bastimentos (Bocas del Toro).



**Hoplomys gymnurus** Thomas

Locally uncommon to abundant. Eastern Panama and the Caribbean coast of western Panama. Evergreen forest. Terrestrial. Subspecies in Panama: (1) *H. g. goethalsi* Goldman. Specimens from Cana, 2000 feet, and Tacarcuna Village, 1950 feet (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000–2100 feet (Panamá); Fort Sherman, Gatún, and Río Indio (Canal Zone), and Almirante, Boca del Drago, Cayo Agua, 7 km. SSW. of Changuinola, Isla Bastimentos, Isla Colón, upper Río Changena, 2400 feet, and Sibube (Bocas del Toro). (2) *H. g. wetmorei* Handley. Isla Escudo de Veraguas (Bocas del Toro).

**Diplomys labilis** Bangs

= *Diplomys darlingi* Goldman

= *Diplomys darlingi* Hall and Kelson

At low elevations in the Canal Zone and eastern Panama. Arboreal. Nests in tree holes. Subspecies in Panama: (1) *D. l. darlingi* Goldman. Rare. Specimens from Cerro Malí, 5000 feet, Marragantí, and Tapalisa, 400 feet (Darién); Armila and Mandinga (San Blas); and Ancón, Fort Kobbe, and Juan Mina (Canal Zone). (2) *D. l. labilis* Bangs. Common on Isla del Rey (Panamá).

## Order CETACEA

Family **Physeteridae****\*Physeter catodon** Linnaeus

Rare. Definitely recorded only for the Gulf of Panamá, but probably occurs off both coasts. Marine.

Family **Delphinidae****\*Stenella graffmani** Lönnberg

Common. Gulf of Panamá, Gulf of Chiriquí, and probably other Pacific coastal waters. Marine.

**\*Stenella longirostris** Gray

Rare, Pacific. Specimen taken between Panama and Galápagos Islands. Marine. Possibly more pelagic than *S. graffmani*.

**\*Stenella plagiodon** Cope

Possibly common. Gulf of San Blas and probably other Caribbean coastal waters. Marine.

**\*Tursiops nuuanu** Andrews

Pacific. Specimen taken 70 mi. S. of Panamá. Marine.

**\*Globicephala** species?

On 29 March 1962, Dr. Alexander Wetmore observed a group of small whales off Isla Cébaco (Veraguas) which he took to be *Globicephala*.

Family **Balaenopteridae**\* **Balaenoptera physalus** Linnaeus

Possibly uncommon. Caribbean. Marine.

\* **Megaptera novaeangliae** Borowski

Uncommon. Pacific. Observed in Gulf of Panamá. Marine.

\* **Sibbaldus musculus** Linnaeus

Possibly rare. Caribbean. A dead specimen washed ashore at Cristóbal (Canal Zone). Marine.

Order **CARNIVORA**Family **Canidae**\* **Urocyon cinereoargenteus** Schreber

Rare. Canal Zone and Pacific coast of western Panama. Semi-arid savanna and scrub country. Terrestrial. Specimen from 3 mi. W. of Balboa (Canal Zone). The Panamanian subspecies is *U. c. furvus* G. M. Allen and Barbour.

**Speothos venaticus** Lund

= *Icticyon panamensis* Goldman

= *Speothos panamensis* Hall and Kelson

Rare. Definitely known only in extreme eastern Panama, but reported from Canal Zone, Bocas del Toro, and Chiriquí. Forest. Terrestrial. Specimens from Cerro Pirre, 5000 feet (Darién). The Panamanian subspecies is *S. v. panamensis* Goldman. For use of this name combination, see Hershkovitz (1957, p. 161).

Family **Procyonidae****Bassariscus sumichrasti** Saussure

Rare. Known in Panama only by a specimen from Boquete, 6000 feet (Chiriquí). Arboreal. The Panamanian subspecies is *B. s. notinus* Thomas.

**Procyon cancrivorus** Cuvier

Uncommon. Eastern Panama and the Caribbean coast of western Panama. It has been reported on the Pacific coast of Costa Rica. Mostly terrestrial. Specimens from Boca de Río Paya, Cana, 2000 feet, Río Pucro, and Tacarcuna Village, 1950 feet (observation only) (Darién); Armila (observation only) and Mandinga (San Blas); Panamá (Panamá); Portobelo (Colón); Gatun (Canal Zone); and 3.7 miles SE. of Almirante (Bocas del Toro). The Panamanian subspecies is *P. c. panamensis* Goldman.

**Procyon lotor** Linnaeus

Locally common. Central and western Panama. Mostly arboreal. Sub-

species in Panama: (1) *P. l. crassidens* Hollister. Western portion of the Caribbean coast. Specimens from Almirante, 7 and 12 km. SSW. of Changuinola, and Isla Bastimentos (Bocas del Toro). (2) *P. l. pumilus* Miller. Central Panama and Pacific coast of western Panama. Specimens from Chepo (Panamá); Portobelo (Colón); Balboa, Fort Randolph, and Gatún (Canal Zone); and Boquerón, Cerro Punta, 5300 feet, and Pedregal (Chiriquí).

***Nasua nasua* Linnaeus**

= *Nasua narica* Goldman

= *Nasua narica* Hall and Kelson

Locally common. Throughout Panama at all elevations. Forest and forest clearings. Partly arboreal and partly terrestrial. The Panamanian subspecies is *N. n. narica* Linnaeus (= *N. n. panamensis* J. A. Allen). For notes on the nomenclature of *Nasua* see Cabrera (1958, p. 245).

***Potos flavus* Schreber**

Common. Throughout Panama at all elevations. Arboreal. Subspecies in Panama: (1) *P. f. chiriquensis* J. A. Allen. Western Panama and Canal Zone, east to Mandinga (San Blas) and Cerro Azul (Panamá). (2) *P. f. isthmicus* Goldman. Darién.

***Bassaricyon gabbii* J. A. Allen**

Uncommon. Possibly throughout Panama, up to at least 5300 feet elevation (but not recorded on the Pacific coast west of La Chorrera, except at high elevations). Arboreal. Specimens from Boca de Río Paya, Cana, 1800–2000 feet, Cerro Pirre, 5000 feet, and Tacarcuna Casita, 1500 feet (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000 feet, La Chorrera, and Pacora (Panamá); Salud (Colón); Corozal and Gatún (Canal Zone); Cerro Pando, 4800 feet, and Cerro Punta, 5300 feet (Chiriquí); and Almirante (Bocas del Toro). The names that might apply to these populations have not been evaluated: *B. g. gabbii* J. A. Allen, "Talamanca", Costa Rica; *B. g. orinomus* Goldman, Cana, Darién, Panama (a synonym of *B. g. medius* Thomas, Jimenez, Chocó, Colombia?); and *B. pauli* Enders, Cerro Pando, Chiriquí, Panama.

**Family Mustelidae**

***Mustela frenata* Lichtenstein**

= *Mustela affinis* Goldman

Locally distributed throughout Panama. Mostly rare, but evidently fairly common in the highlands of Chiriquí. Forest and agricultural land, probably most numerous in the latter. Terrestrial. Specimens from Cerro Pirre, 5000 feet (Darién); Cerro Azul, 2000 feet (Panamá); Río Indio (Canal Zone); and Boquete, 4000–5800 feet, Cerro Punta, 5000 feet, Río Gariché, 5300 feet, and Siolo (Chiriquí). The Panamanian subspecies is *M. f. panamensis* Hall.

**Eira barbara** Linnaeus

= *Tayra barbara* Goldman

Uncommon. Probably throughout Panama at lower elevations. Forest and fruit groves. Partly arboreal, partly terrestrial. Specimens from Boca de Río Paya, Boca de Río Pucro, Tacarcuna Village, 1950 feet, and Tapalisa (Darién); Mandinga (San Blas); Cerro Azul, 2000 feet, and Charco del Toro, Río Majé (Panamá); Gamboa and Gatún (Canal Zone); Guánico (Los Santos); Bugaba (Chiriquí); and Sibube (Bocas del Toro). The Panamanian subspecies is *E. b. biologiae* Thomas.

**Galictis allamandi** Bell

= *Grisson canaster* Goldman

Rare. Probably occurs locally throughout Panama. Terrestrial, but perhaps partly arboreal. Specimens from Boca de Río Paya and Cana, 1800 feet (Darién); Chepo (Panamá); Buena Vista (Colón); and Almirante (Bocas del Toro). The Panamanian subspecies is *G. a. canaster* Nelson.

**Conepatus semistriatus** Boddaert

= *Conepatus tropicalis* Goldman

Rare. Possibly occurs locally throughout, but specimens have been taken only in western Panama: Boquerón, Boquete, 4000 feet, and Cerro Punta, 5000 feet (Chiriquí); and Sibube (Bocas del Toro). Terrestrial. The Panamanian subspecies is *C. s. trichurus* Thomas.

**Lutra annectens** Major

= *Lutra repanda* Goldman

Uncommon. Probably occurs in suitable streams throughout Panama. Semi-aquatic. Specimens from Boca de Río Paya, Cana, 2000 feet, Tacarcuna Village, 1950 feet, and Tapalisa (Darién); Río Chimán (Panamá); Gamboa and Gatún (Canal Zone); and Río Changuinola (Bocas del Toro). The subspecies in Panama is *L. a. repanda* Goldman.

**Family Felidae****Felis concolor** Linnaeus

= *Felis bangsi* Goldman

Rare and apparently local in distribution, although possibly occurring throughout Panama. Mostly terrestrial. From Tacarcuna Village (Darién); Charco del Toro, Río Majé; La Jagua; and Río Bayano, 10 mi. above mouth of Río Mamoní (Panamá); 4 mi. E. of Gamboa (Canal Zone); and Boquerón; Boquete; and Cerro Punta, 6800 feet (Chiriquí). Reported in San Blas, Los Santos, and Bocas del Toro. The Panamanian subspecies is *F. c. costaricensis* Merriam.

**Felis onca** Linnaeus

Uncommon. Probably occurs throughout Panama at all elevations. Mostly terrestrial. Specimens from Boca de Cupe (Darién); Río Peluca

(Panamá); Canal Zone; and Río Changuinola (Bocas del Toro). The subspecies is *F. o. centralis* Mearns.

**Felis pardalis** Linnaeus

Common. Probably occurs throughout Panama at all elevations. Mostly terrestrial, but often dens in trees. Specimens from Cerro Pirre and El Real (Darién); Armila and Mandinga (San Blas); Cerro Azul, 2000 feet, and Río Majé (Panamá); Gatún (Canal Zone); Salud (Colón); Boquerón and Boquete, 4000 feet (Chiriquí); and 10 km. SSW. of Changuinola, Punta de Peña, and Sibube (Bocas del Toro). The Panamanian subspecies is *F. p. mearnsi* Lyon (= *F. costaricensis* Mearns).

**Felis wiedii** Schinz

= *Felis pirrensis* Goldman

Uncommon, but possibly occurs throughout Panama. Mostly terrestrial, but often dens in trees. Specimens from Cana, 2000 feet, and Tacarcuna Village, 1950 feet (Darién); Mandinga (San Blas); Cerro Azul, 2000 feet (Panamá); Salud (Colón); Caleobevora (= Calovévora) (Veraguas); and Sibube (Bocas del Toro). The Panamanian subspecies is *F. w. pirrensis* Goldman.

**Felis yagouaroundi** Geoffroy

= *Herpailurus yagouaroundi* Goldman

Uncommon, but possibly occurs locally throughout Panama. Partly arboreal and partly terrestrial. Specimens from Cana (Darién); Mandinga (San Blas); Empire and Lion Hill (Canal Zone); Boquerón (Chiriquí); and Sibube (Bocas del Toro). The Panamanian subspecies is *F. y. panamensis* J. A. Allen

Order SIRENIA

Family Trichechidae

**Trichechus manatus** Linnaeus

Rare. Aquatic. Probably formerly occurred in the lower reaches of many of the rivers that drain into the Caribbean. Still occurs at least about the mouth of the Río Changuinola and in the inner part of Chiriquí Lagoon (Bocas del Toro) where it is hunted persistently for its meat. Apparently no Panamanian specimen has been preserved. The subspecies on this coast is *T. m. manatus* Linnaeus.

Order PERISSODACTYLA

Family Tapiridae

**Tapirus bairdii** Gill

= *Tapirella bairdii* Goldman

Common at all elevations in eastern Panama and on the Caribbean coast, but now rare or absent on the Pacific coast of western Panama. Largely



terrestrial, although often frequenting streams and lake shores. Specimens from Cana, 2000 feet, and Cerro Pirre, 5000 feet (Darién); Mandinga (San Blas); Gatún and Mount Hope (Canal Zone); Boquete, 5000 feet (Chiriquí); and upper Río Changuena, 2400 feet (Bocas del Toro).

### Order ARTIODACTYLA

#### Family Tayassuidae

##### **Tayassu pecari** Link

Uncommon, but probably distributed locally throughout the forested parts of Panama. Terrestrial. Specimens from Río Changuinola (Bocas del Toro). On geographical grounds the subspecies in Panama should be *T. p. spiradens* (Goldman). For notes on the use of the name *Tayassu pecari* Link rather than *Tayassu albirostris* Illiger as recommended by Cabrera (1961, p. 316) see Hershkovitz (1963, p. 85).

##### **Tayassu tajacu** Linnaeus

= *Pecari angulatus* Goldman

Common throughout Panama except where it has been excessively hunted. Forest and forest clearings. Terrestrial. Specimens from Boca de Cupe, Boca de Río Paya, El Real, and Tacarcuna Village, 1950 feet (Darién); Barro Colorado Island, Gamboa, Gatún, and Madden Dam (Canal Zone); Escobal (Colón); Paracoté (Veraguas); Boquete (Chiriquí) and Almirante, 7 km. SSW. of Changuinola, Río Teribe, and Sibube (Bocas del Toro). The names *T. t. bangsi* Goldman, Boca de Cupe (Darién), and *T. t. crusnigrum* Bangs, Boquete (Chiriquí), are available for Panamanian populations.

#### Family Cervidae

##### **Odocoileus virginianus** Zimmermann

= *Odocoileus chiriquensis* Goldman

= *Odocoileus rothschildi* Goldman

= *Dama virginiana* Hall and Kelson

Uncommon. Pacific coast of central and western Panama, Canal Zone, and western extreme of Caribbean coast. Apparently absent from the remainder of the Caribbean coast and eastern Panama. Terrestrial. Usually in thickets in savannas or in patches of wild cane along rivers, but inhabiting dense forest on the Azuero Peninsula. Subspecies in Panama: (1) *O. v. chiriquensis* J. A. Allen. Specimens from Río Bayano (Panamá); Corozal and Gatún (Canal Zone); Cerro Hoya, 2800 feet (Los Santos); and Boquerón and Boquete (Chiriquí). (2) *O. v. rothschildi* Thomas. Isla Coiba. (3) *O. v. truei* Merriam (= *O. costaricensis* Miller). Sibube (Bocas del Toro).

##### **Mazama americana** Erxleben

= *Mazama sartorii* Goldman

Common. Probably throughout the forested parts of Panama. Terrestrial. Subspecies in Panama: (1) *M. a. cerasina* Hollister. Caribbean

coast of western Panama. Specimens from Almirante, 14 km. SSW. of Changuinola, Río Teribe, and Sibube (Bocas del Toro). (2) *M. a. reperticia* Goldman. Mainland Panama, except the western Caribbean coast. Specimens from Boca de Cupe, Cana, Chepigana, Cituro, El Real, Río Chucunaque, Tacarcuna Casita, 1600 feet, Tacarcuna Laguna, 3000 feet, Tacarcuna Village, 3200 feet, and Tapalisa (Darién) ; Maxon Ranch, Río Trinidad (Panamá) ; Gatún (Canal Zone) ; and Boquete, 4000–4800 feet (Chiriquí).

\* **Mazama gouazoubira** Fischer

Uncommon. Terrestrial. Known in Panama only on Isla San José. The Panamanian subspecies is *M. g. permira* Kellogg.

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